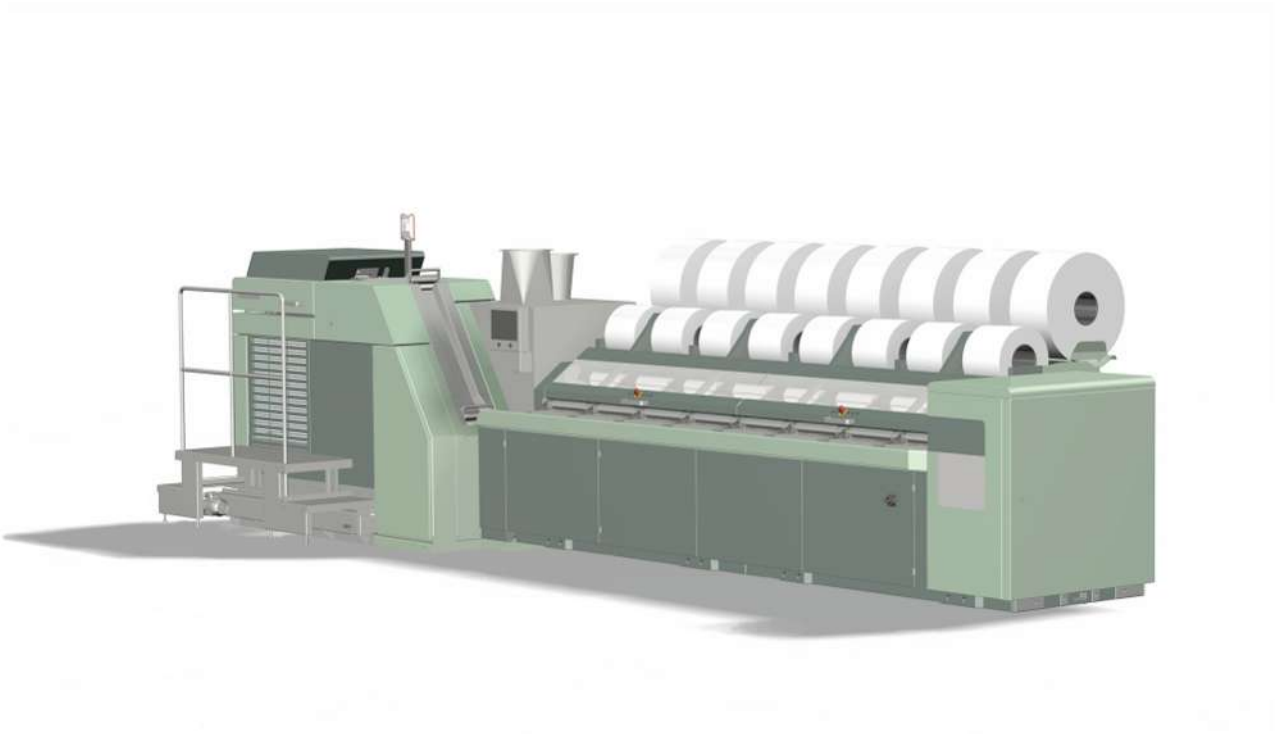

Operation Manual

Comber E 90

40026722 / 40028488

Original instructions | 28.05.2021 | en-US

Imprint

Manufacturer	Maschinenfabrik Rieter AG Klosterstrasse 20 CH-8406 Winterthur Switzerland
Customer service telephone	+41 52 208 71 71
Customer service email	aftersales@rieter.com
Website	www.rieter.com
Material number	11160872

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1 Introduction

This chapter contains information about the work with the operation manual.

1.1 About the Operation Manual

The operation manual is a part of the machine and is to be kept at the machine. The instructions from the third-party suppliers are also to be kept at the machine.

The operation manual is identified by the material number and the revision number. These identification properties are specified in the legal notice.

1.2 Availability of the Operation Manual

The machine owner must make sure that the personnel read and obey the operation manual. The machine owner must make sure that the personnel that do the work always have easy and fast access to the operation manual.

1.3 Conventions Used

The writing conventions that are used are as follows:

Writing Convention		
Name	**Example**	**Description**
Section information	Chapter 1, 1.1, 1.1.1	The chapter numbers are given in a sequence. The chapter numbering starts with the number 1.
Figure number	*Figure 1*	The figure numbers are given in a sequence. The figure numbering starts with the number 1.
Callout	1	The elements in the figure are identified with position numbers.
Prerequisite	✓	The given requirements are to be obeyed before the work or the operation starts.
Reference	▶	The reference to a different chapter or information is given.

Writing Convention		
Name	**Example**	**Description**
Intermediate result	⇨	The intermediate result is the reaction of the machine or the assembly that occurs after a work step. The machine or the assembly is in a specified condition.
Instruction in a safety message	▶	The symbol starts the safety instruction in the safety message.

1.4 Intended User

Only Rieter-approved personnel are permitted to operate the machine, do the maintenance work, and the repair work at the machine. The personnel must know the contents of this operation manual and how to find the related information.

The table contains information about the skills of the different personnel that do the work at the machine.

Personnel	Description	Skills / Requirements
Mill manager, textile technologist	The mill manager or the textile technologist: – Monitors the quality of the product – Does the managment and monitors the production procedure – Monitors the machine efficiency	The mill manager or the textile technologist completed the training as a textile engineer.

Personnel	Description	Skills / Requirements
Installation personnel	The installation personnel install the machine and the machine components. The installation personnel: – Are responsible to install all machine components correctly – Give instructions to the auxiliary personnel – Give instructions to the electrician – Do all function tests that are necessary for the commissioning of the machine – Do the commissioning and puts the machine into operation after the machine is installed	The installation personnel: – Are Rieter-approved persons and employees of Rieter – Did the training courses supplied by Rieter – Know all safety regulations that are necessary to install the machine and the machine components
Shift supervisor	The shift supervisor: – Does the commissioning and the changeover of the machine – Adjusts parameters – Monitors the machine efficiency – Does the troubleshooting	The shift supervisor: – Did the training courses supplied by Rieter – Knows all safety regulations that are necessary to put the machine and the machine components into operation – Is a person with a training as a technician
Laboratory personnel	The laboratory personnel: – Monitor the quality of the product – Adjust parameters	The laboratory personnel: – Did the training courses supplied by Rieter – Are persons with a training as a textile engineer or laboratory technician

Personnel	Description	Skills / Requirements
Operator	The operator: – Supplies the material to the machine – Removes the material from the machine – Prevents the standstill of the machine because of not sufficient material, cans, or tubes – Does the daily cleaning work	The operator: – Did the training courses supplied by Rieter or the shift supervisor – Knows all safety regulations that are necessary to operate the machine and the machine components
Electrician	The electrician: – Installs the current and the voltage supply at the machine – Does the inspection work of the electrical components and the components of the safety circuit – Does the electrical repair work – Does the troubleshooting	The electrician: – Is a person with a training as an electrician, an electronics engineer, or a mechatronics engineer – Did the training courses supplied by Rieter – Knows all safety regulations that are necessary to do the repair work and the maintenance work at the machine and the machine components
Mechanic	The mechanic: – Does the mechanical inspection work of the machine and the components – Does the mechanical repair work – Does the troubleshooting	The mechanic: – Is a person with a training as a mechanic – Did the training courses supplied by Rieter – Knows all safety regulations that are necessary to do the repair work and the maintenance work at the machine and the machine components

Personnel	Description	Skills / Requirements
Maintenance personnel	The maintenance personnel: – Clean the machine and the machine components – Do the lubrication of the machine	The maintenance personnel: – Did the training courses supplied by Rieter and the shift supervisor – Knows all safety regulations that are necessary to do the maintenance work at the machine and the machine components

1.5 Liability

If the assembly of new or existing facilities is done by a third party that is against regulations, Maschinenfabrik Rieter AG (called Rieter) does not accept liability.

The auxiliary agents supplied by Rieter such as cranes, caster jacks, etc. are to be used only in the area and for the intended types of machine and for no other purpose. Rieter does not accept responsibility for damage because of inappropriate usage of the auxiliary agents.

If the machine is used for a purpose other than the intended purpose, Rieter does not accept liability.

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2 Safety

This chapter contains information about:

- The general safety information
- The intended users
- The location of the safety labels
- The safety equipment
- The danger zones

2.1 General Safety Information

This chapter contains information about the safety of the machine.

All personnel that do work at the machine must know and obey the safety instructions.

This machine has state-of-the-art technology and gives a high degree of operational safety.

The standards and directives applied during design, production, and configuration are recorded in the EC/EU Declaration of Conformity and the manufacturer's declaration.

Also, the national safety regulations, the mill safety regulations, and the applicable accident prevention regulations are to be obeyed.

Failure to Obey Safety Instructions

Rieter is not liable for damage that is caused if the safety instructions are not obeyed, specially damage that is caused because of:

- The machine is used for different purposes than the machine is made for.
- Incorrect operation
- Incorrect selection of materials and tools
- Not sufficient or missing maintenance work and repair work

2.2 Safety Messages

The safety messages have 4 different signal words that refer to the severity level.

DANGER

If these safety instructions are NOT obeyed, the situation causes death or severe injuries.

⚠ **WARNING**

If these safety instructions are NOT obeyed, the situation can cause death or severe injuries.

⚠ **CAUTION**

If these safety instructions are NOT obeyed, the situation can cause minor injuries.

NOTICE

This message shows that the user must obey the given instructions to prevent property damage.

Structure of the Safety Messages

Each safety message contains these elements:

- Safety alert symbol
- Signal word
- Type and source of the hazard
- Consequences if the dangerous situation is not prevented
- Instructions on how to prevent the dangerous situation
- 1 more warning symbol, mandatory symbol, or prohibition symbol can make clear the safety text

2.3 General Safety Instructions

The general safety instructions that follow are to be obeyed:

1. Give the machine key and the password only to approved personnel.
2. Only approved personnel are permitted to operate the machine.
3. Operate the machine only in a damage-free condition.
4. Stop the machine to change, install, remove, do maintenance work on, or to repair the machine or machine components.
5. Set the main switch to the position OFF. Padlock the main switch.
6. Keep the machine floor, the platforms, and the operating platforms clean of grease, oil, and other fluids.
7. Do not go onto the machine.
8. Always put on personal protective equipment.
9. Put away long hair.
10. Do not put on:

- Finger rings
- Wristwatches
- Scarves
- Loose clothes

Safety Devices and Monitoring Devices

Only approved personnel are permitted to remove the safety devices and the monitoring devices. Before the devices are replaced, the approved personnel must make sure that the main switch is set to the position OFF, the main switch is padlocked, and the power supply is disconnected. Modifications that are not approved can cause death, injury, or property damage.

The instructions that follow are to be obeyed:

1. Do not make the safety devices short-circuit.
2. Replace defective safety devices of the safety circuit by original safety devices and with the full work unit only.
3. Only Rieter-approved personnel are permitted to assemble the machine.
4. Examine the correct function of the safety devices before the machine starts to operate, after commissioning, and when safety devices were replaced.
5. *Safety Circuit and Safe Torque Off (STO)* ▸ *28*

External Transport System

The safety requirements for an external transport system are to be obeyed by the operating company.

The operating company must make sure that the warning signs, the mandatory signs, and the prohibition signs are possible to be read.

2.4 Emergency Report

A report of the accident must be as follows:

- Who makes the call?
- What occurred?
- What is the type of injury?
- When?
- Where?
- How many persons have an injury?
- Are there other dangers?

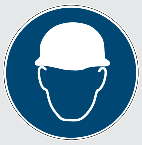
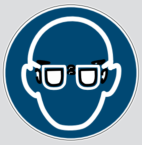
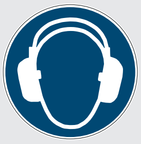
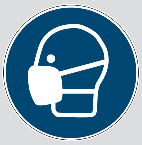
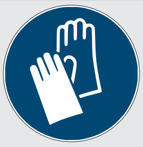
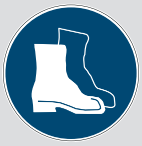
If an accident occurs:

1. Give first-aid treatment.

2. Make a call to the local emergency center.
3. Give information about the accident to Rieter.

2.5 Personal Protective Equipment

The personal protective equipment that follows is to be used:

Symbol	Information
	Safety helmet Use a safety helmet to prevent head injuries. Refer to the EN 397:2012+A1:2012 standard.
	Eye protection Use eye protection to give protection to the eyes from particles that occur during work at the machine. Refer to the EN ISO 166 standard.
	Ear protection Use ear protection to give protection to ears from high-volume noise. Refer to the EN 352 standard.
	Respiratory protection Use respiratory protection to give protection to the respiratory tract from dust. Refer to the EN 149:2001+A1:2009 standard.
	Safety gloves Use cut-resistant safety gloves that have a flexible, impact-resistant layer to give protection to hands from cut injuries. Refer to the standard EN 388:2016. Use chemical-resistant safety gloves to give protection to hands from injuries by chemical materials. Refer to the EN 374 standard. Use heat-resistant safety gloves to give protection to hands from burns. Refer to the EN ISO 407 standard.
	Safety shoes Use safety shoes to give protection to feet from injuries and personnel from electric shocks. Refer to the EN ISO 20345 standard (category S3).

2.6 Preventing Damage of Electronic Components

Electronic components are sensitive to electrostatic charges.

1. Release the electrostatic charge on grounded metal parts before contact with electronic components. Use a grounding wristband.

2. Touch electronic components only if necessary.

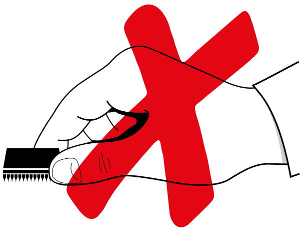


Figure 1: Electronic components

3. Do not touch the pins or parts of the printed circuit board of electronic components.

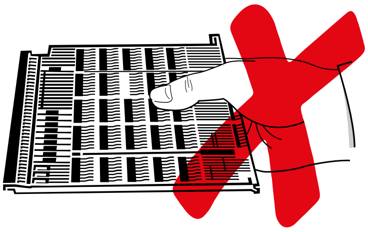


Figure 2: Pins or tracks of electronic components

4. Do not let electronic components touch objects that have an electrostatic charge (for example, synthetic materials).

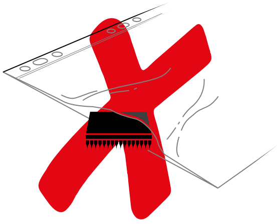


Figure 3: Electronic components and electrostatically chargeable objects

5. Do not keep electronic components near computer screens. Keep a distance of a minimum of 10 cm between an electronic component and the computer screen.

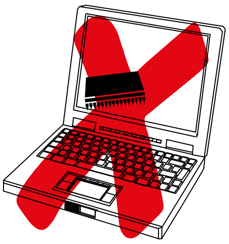


Figure 4: Electronic components near computer screens

2.7 Fire Protection

Fires can occur during the processing of textile materials.

Fires can occur because of:

- Smoking
- Contact of the fiber material with hot surfaces as, for example, hot bearings
- Fiber material gets in contact with sparks that occur during the grinding of metals or because of a short circuit, for example metal parts in the cotton bale.

The personnel must know how to operate the manually operated extinguishing systems to extinguish fires.

The instruction of the personnel about the extinguishing systems and about the escape procedures is necessary.

The standards of the local fire protection authorities are to be obeyed to operate the fire extinguishing systems.

To prevent the explosion of trash particles, dust, and fibers:

- An air circulation system is to be specially installed in the areas of fiber operation.
- The pipe system that moves the fibers is to be grounded.
- Dust and fibers are to be removed regularly.
- A vacuum cleaner is to be used.

2.8 Safety Circuit and Safe Torque Off (STO)

The safety circuit has sensors, operating elements, and actuators.

The safety circuit is used to give protection to the personnel, the environment, and the equipment.

The electrical documentation contains the information about the safety circuit connections.

The safety devices of the safety circuit are as follows:

- Emergency stop buttons
- Safety limit switches at the doors and the hoods
- Safety relays
- Frequency converters and control systems of stepper motors with integrated functional safety

Safety Functions of the Frequency Converters and the Control Systems of the Stepper Motors

Safety Function Abbreviation	Safety Function
STO	Safe Torque Off

Safety Function Abbreviation	Safety Function
SOS	Safe Operating Stop
SBC	Safe Brake Control
SS1	Safe Stop 1
SS2	Safe Stop 2
SSM	Safe Speed Monitor
SLS	Safe Limited Speed
SDI	Safe Direction

Safe Torque Off (STO) (EN 60204-1)

The STO function makes sure that the torque-generating energy has no effect on the motor. The STO function prevents the motor from an automatic start-up. The control unit of the motor monitors the operating state.

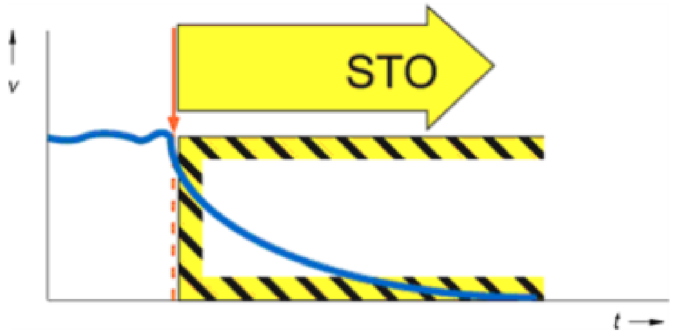


Figure 5: Safe torque off

Safety Instructions for Maintenance Work

1. The safety devices in the safety circuit are not to be opened. The safety circuit is not to be changed.
2. The defective safety devices are to be replaced with the full work unit only.
3. Only let the manufacturer or an organization (Rieter Repair Station) that has written approval repair the safety devices.
4. The necessary measures are given in the "Maintenance" chapter in the operation manual.

After Replacement of a Safety Component

1. Do a function test of the safety circuit. *Inspection Tasks* ▸ *527*
2. Record the results of the function test in the protocol for the safety circuit in the electrical documentation. Record in the protocol of the safety circuit in the electrical documentation if a safety device was replaced. *Protocol for the Safety Circuit* ▸ *489*

Exclusion of Liability

The standards in the operation manual are to be obeyed. Opened or changed safety devices can cause injuries to personnel or damage to the machine.

If changes that are not approved are made to the safety devices, the warranty by Rieter is not applicable.

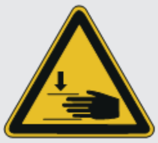
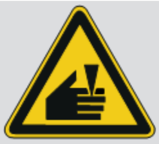
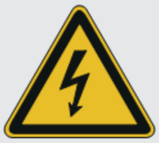
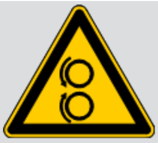
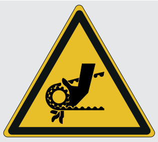
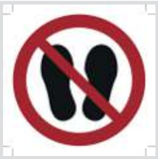
The customer has full responsibility for costs that are caused by changes that are not approved to the safety devices.

2.9 Product Safety

This chapter contains information about the product safety.

2.9.1 Safety Symbols at the Machine

The safety symbols of the machine-specified safety are put on the machine parts or locations where remaining risks are possible.

Description of the Safety Symbols	
Safety Symbol	**Description**
	Caution! Risk of crushing of the hands!
	Caution! Risk of pinching of the hands!
	Caution! Risk of electric shock!
	Caution! Risk of injuries because of rollers that turn in the opposite direction!
	Caution! Risk of hand injuries because of the moving parts!
	Prohibition! Do not step on this area!

Without ROBOlap

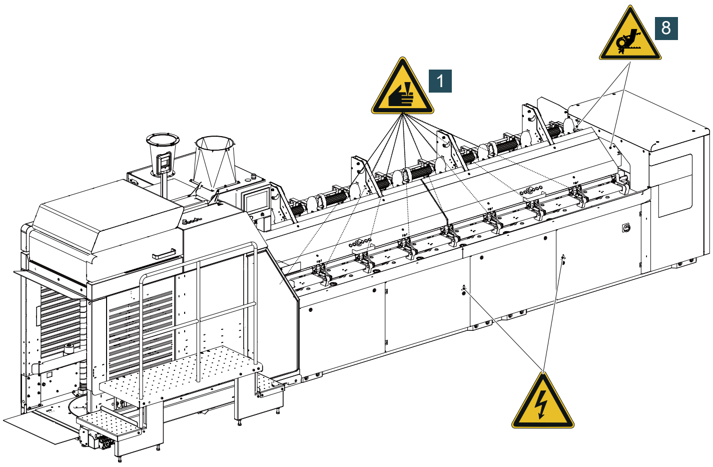


Figure 6: Safety symbols of the longitudinal section

The safety symbols 1 are at the fly duct covers in the machine.

The safety symbols 8 are at the cover between the nipper section and the gearbox.

With ROBOlap

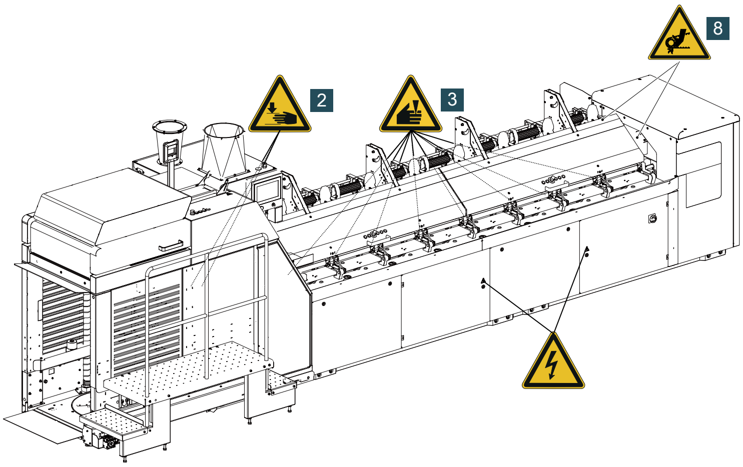


Figure 7: Safety symbols of the longitudinal section (ROBOlap)

The safety symbols 2 are at the locking flap of the ROBOlap suction in the machine.

The safety symbols 3 are at the fly duct covers in the machine.

The safety symbols 8 are at the cover between the nipper section and the gearbox.

CD 600 mm

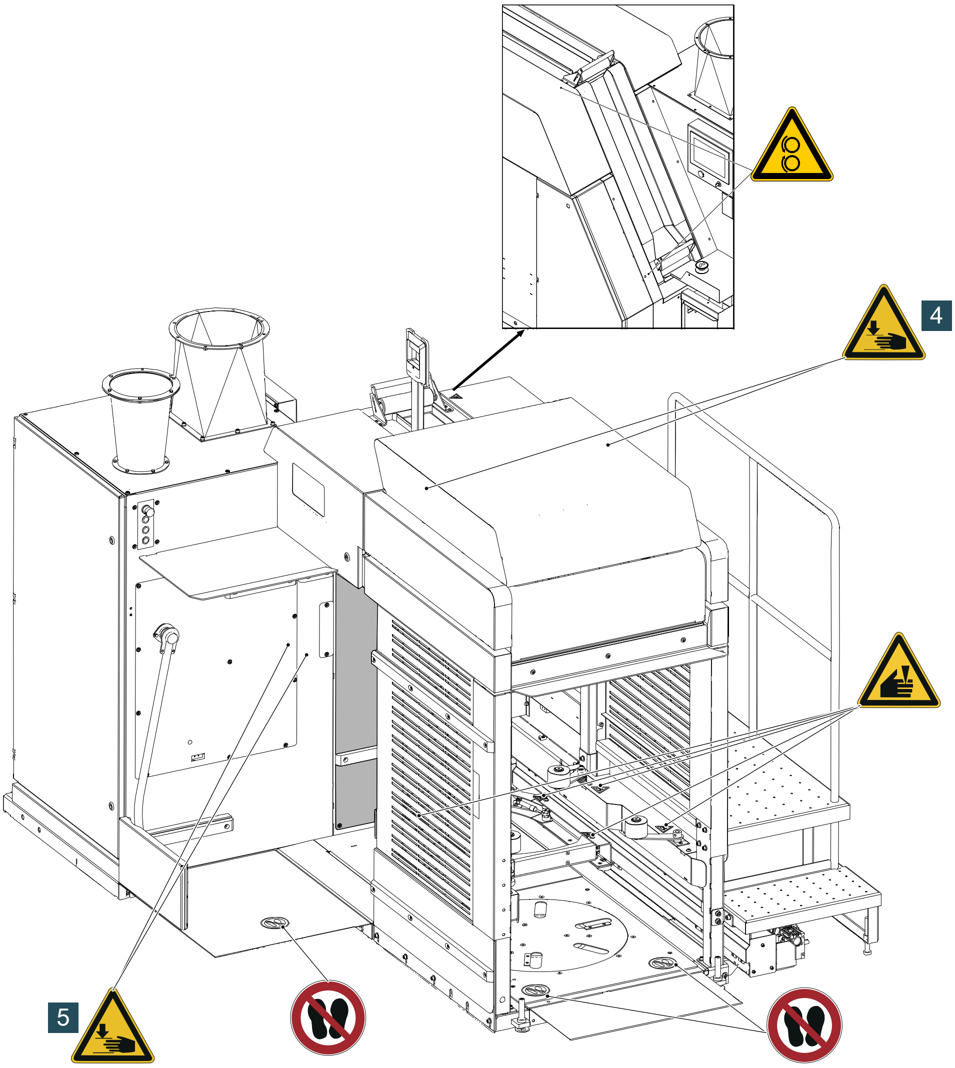


Figure 8: Safety symbols of the delivery unit (CD 600 mm)

The safety symbols 4 are at the loading arm in the machine.

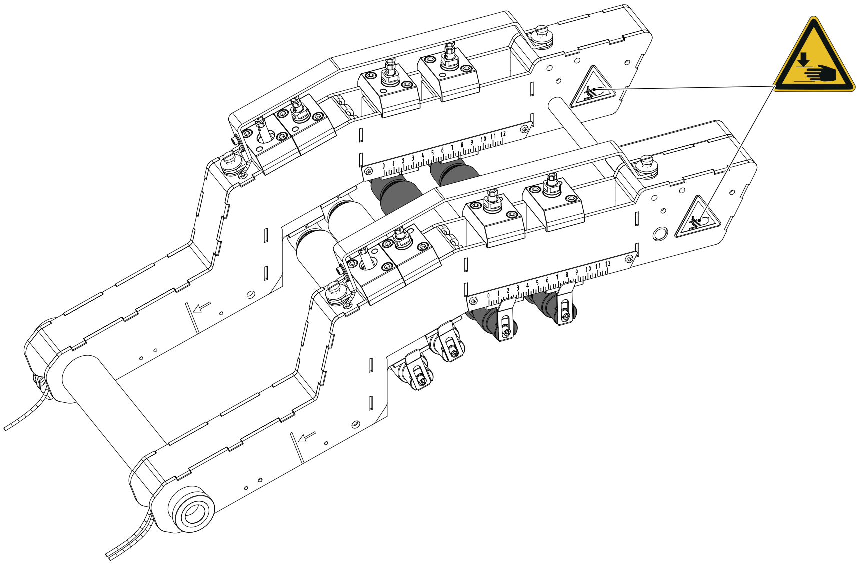


Figure 9: Loading arm

The safety symbols 5 are at the locking flap of the suction unit of the drafting system in the machine.

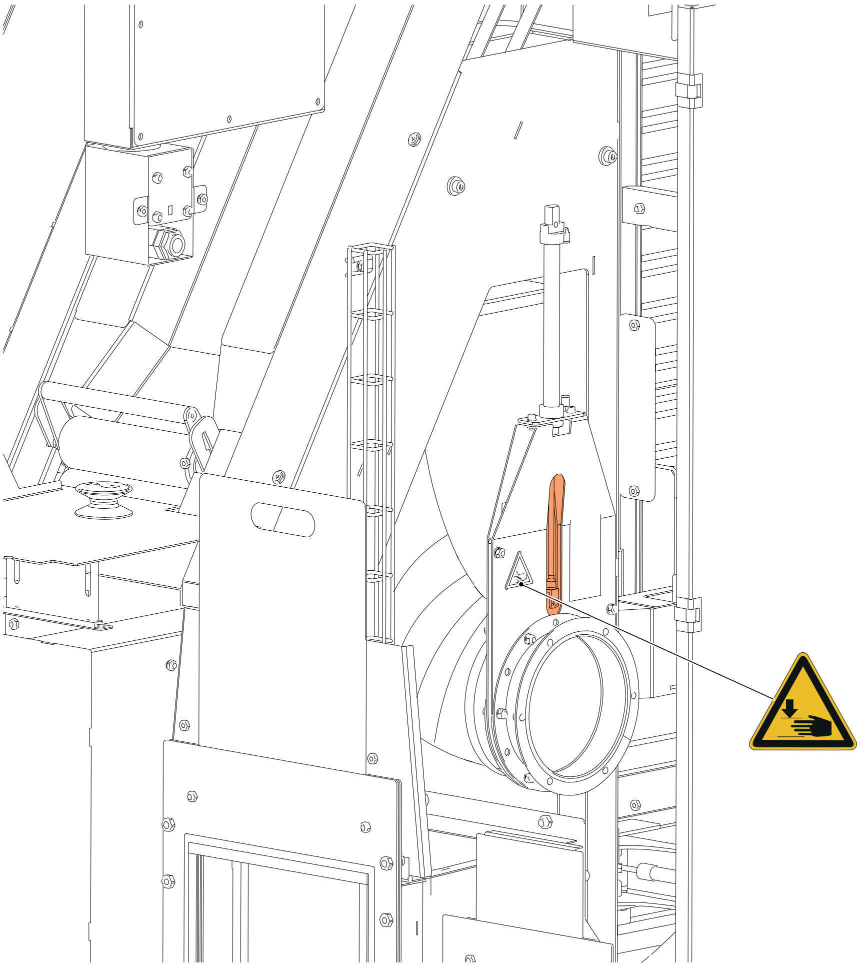


Figure 10: Locking flap in DUC

CD 1000 mm/1200 mm

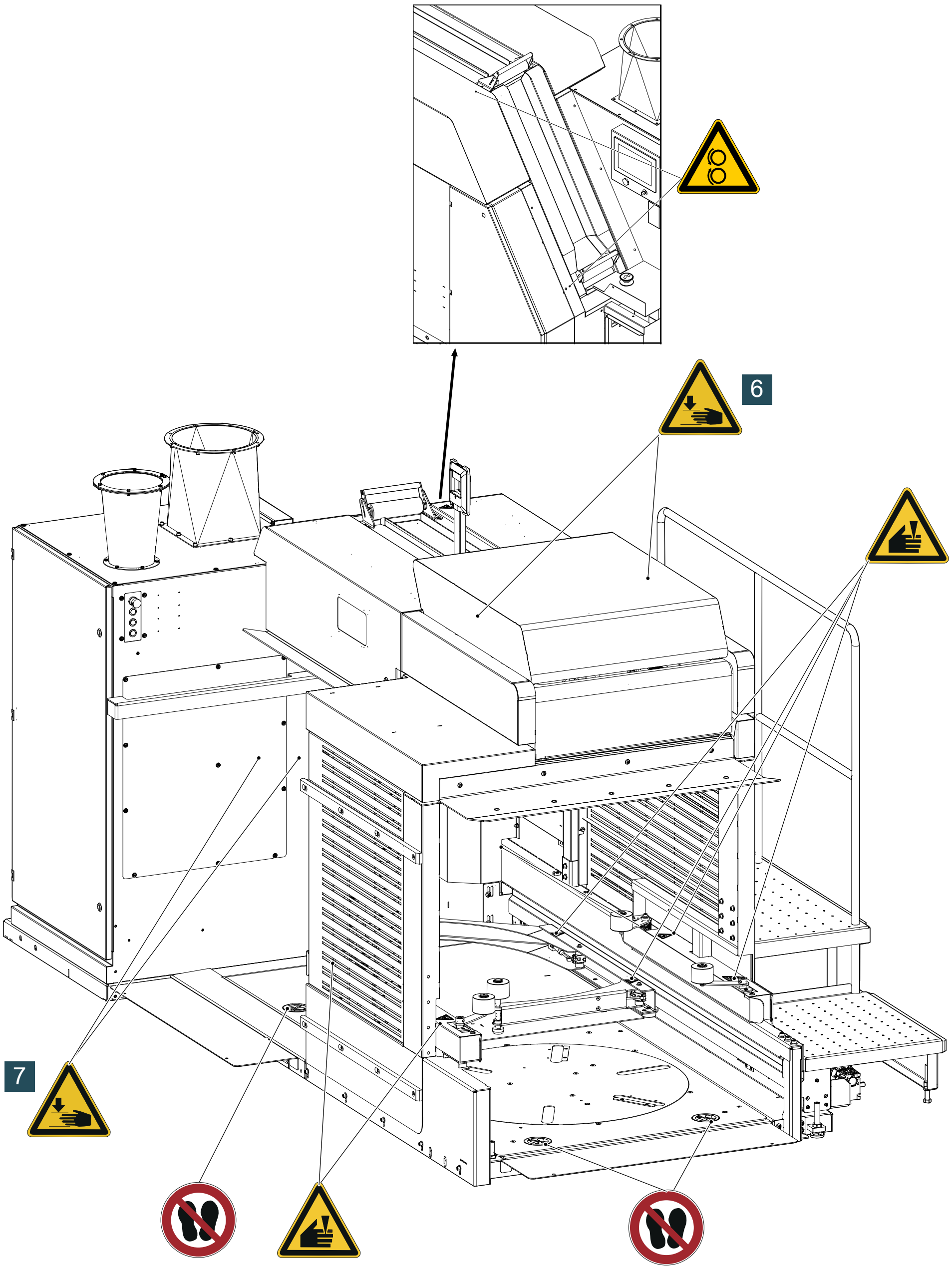


Figure 11: Safety symbols of the delivery unit (CD 1000/1200 mm)

The safety symbols 6 are at the loading arm in the machine.

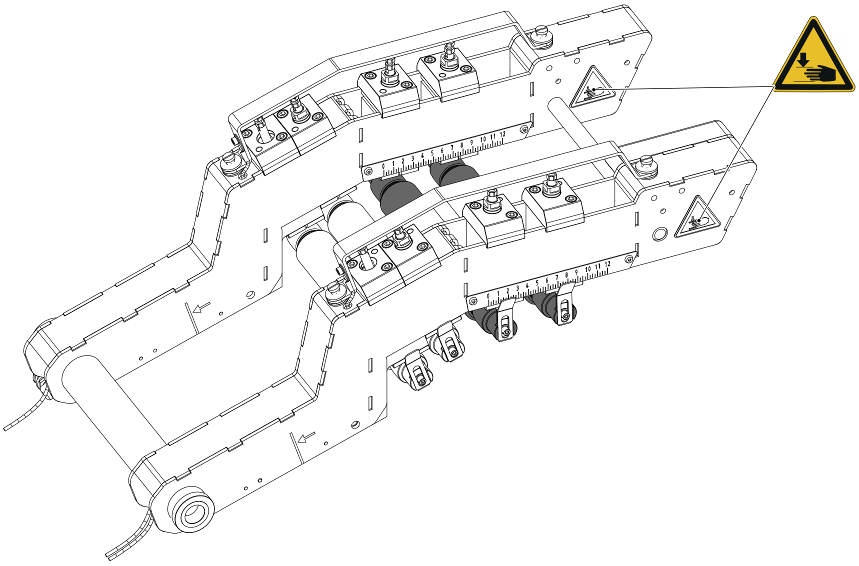


Figure 12: Loading arm

The safety symbol 7 is at the locking flap of the suction unit of the drafting system in the machine.

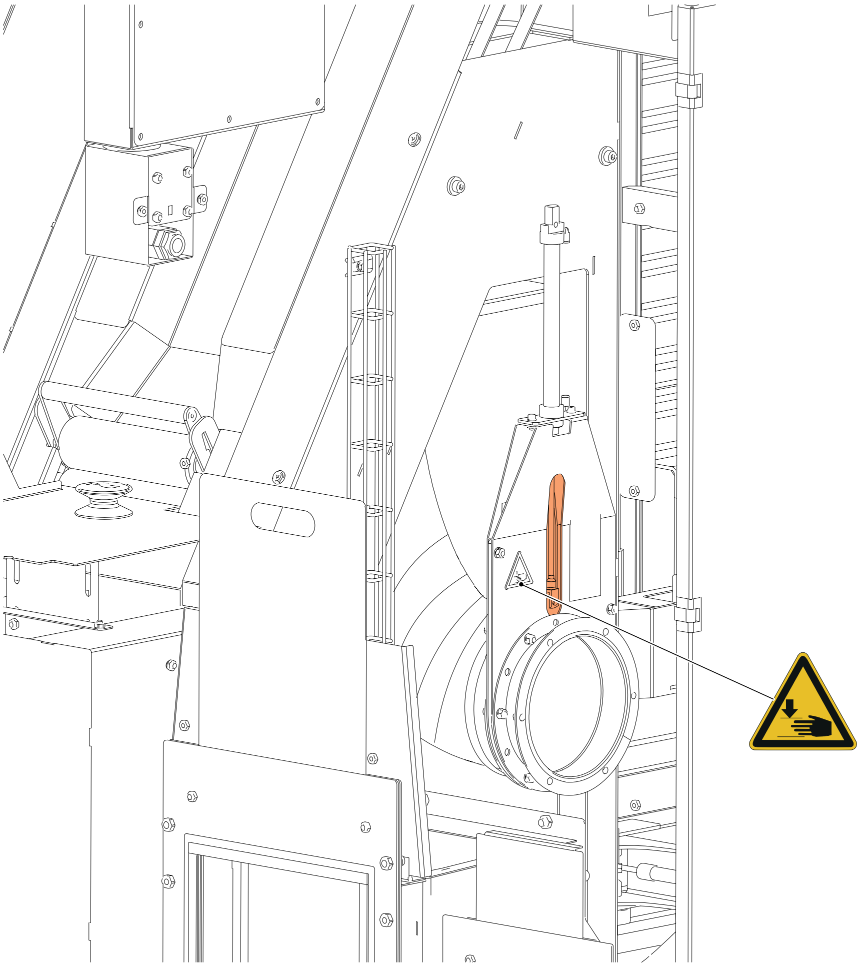


Figure 13: Locking flap in DUC

SERVOlap

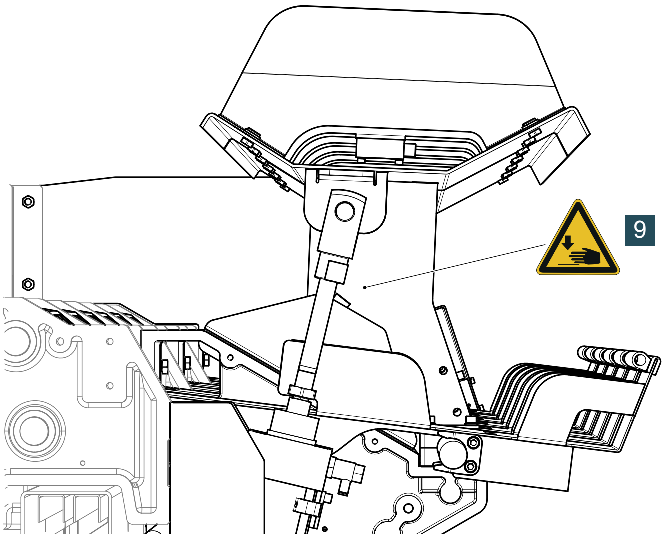


Figure 14: Safety symbols at the lap carrier

The safety symbols 9 are on the 2 sides of the machine. The safety symbol on the right side of the machine is at the 1st combing unit. The safety symbol on the left side of the machine is at the 8th combing unit.

2.9.2 Danger Zones at the Machine

The machine has 2 danger zones, 1 mechanical danger zone and 1 electrical danger zone. This section contains the information about the danger zones at the machine.

2.9.2.1 Danger Zones at the Head Stock

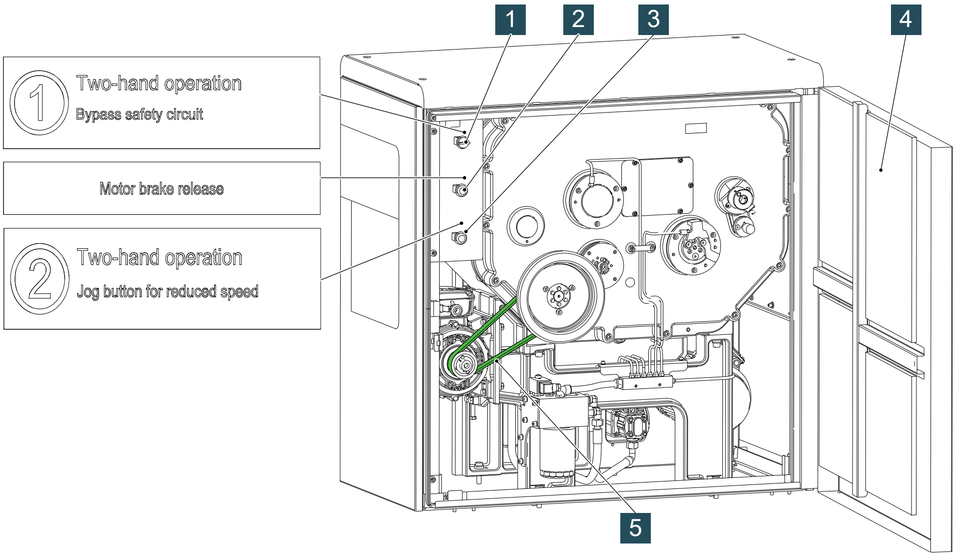
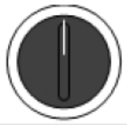
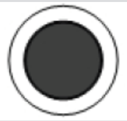


Figure 15: Danger zones at the head stock

1	By-pass safety circuit switch	2	Brake release button
3	Jog button	4	Head stock door
5	Timing belt of the head stock		

2-Hand Operation

The machine is possible to be operated in 2-hand operation in the head stock. The machine is possible to be operated at low speed when the head stock door is open. The 2-hand operation is done with the keys that follow:

	By-pass safety circuit switch	To operate the machine at a low speed, the 2 buttons are to be operated at the same time with 2 hands. Turn and hold the by-pass safety circuit switch and at the same time, push and hold the jog button.
	Jog button	

The by-pass safety circuit switch and the jog button are at the machine in such a way that 1-hand operation is not possible. The 2-hand operation is only used for the setup work and to make basic adjustments.

Injuries are possible to occur if the timing belt of the head stock 5 is in operation while the head stock door 4 is open or a moving part is touched.

2.9.2.2 Danger Zones Between the Head Stock and the Longitudinal Section

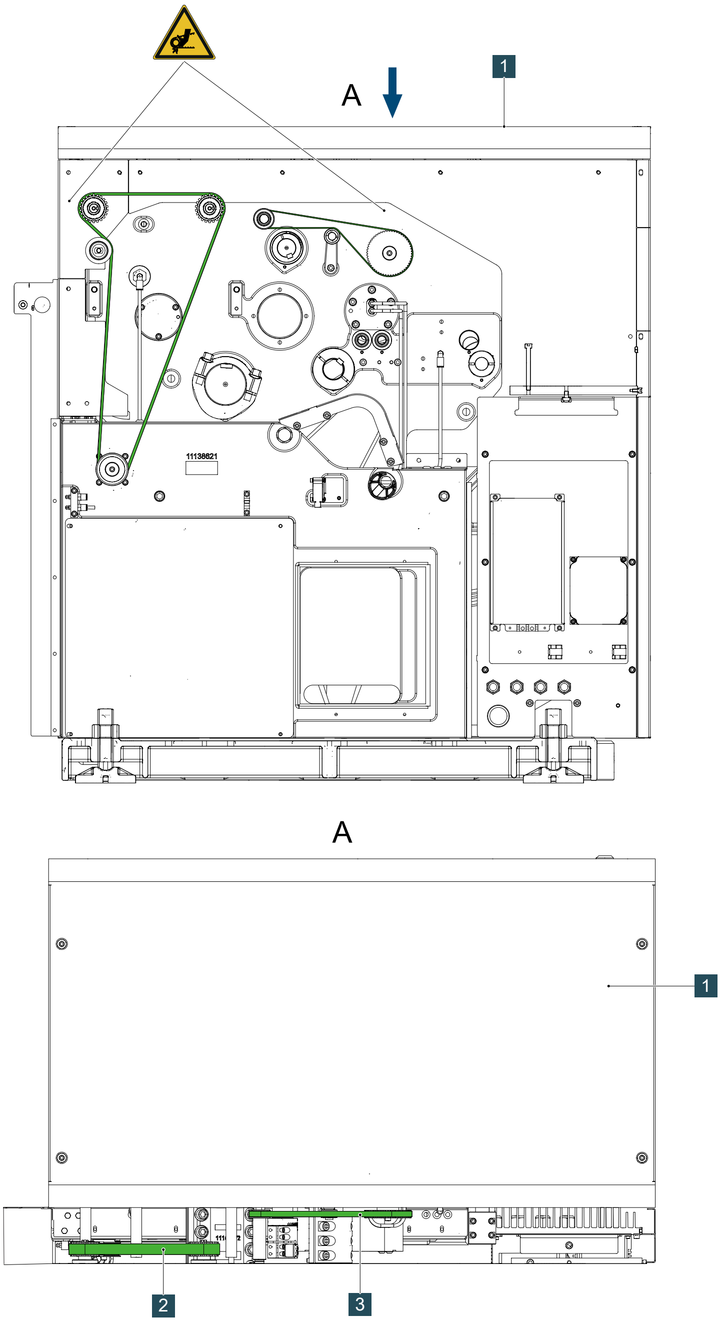


Figure 16: Safety symbols at the head stock

The machine has the 2 danger zones that follow between the head stock 1 and the longitudinal section:

- The belt 2 of the lap rollers
- The belt 3 of the bottom carrier rollers (ROBOlap)

Hand injuries are possible to occur in the danger zones when the belt is in operation.

2.9.2.3 Danger Zone at the Fly Duct Cover

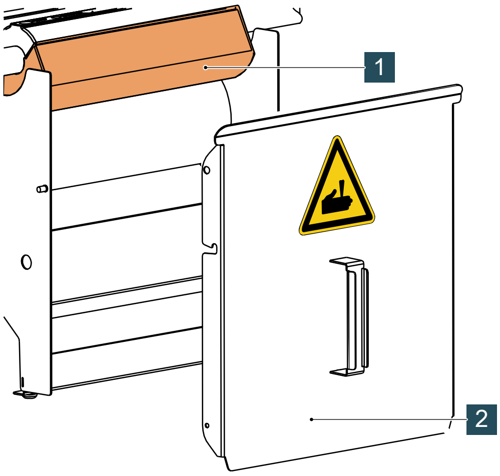


Figure 17: Danger zone at the fly duct cover

If the fly duct cover 2 is removed, the operators are possible to touch the circular comb 1 that has sharp teeth. Injuries to the hands are possible if the operator touches the circular comb 1 accidentally.

2.9.2.4 Danger Zone at the Control Cabinet

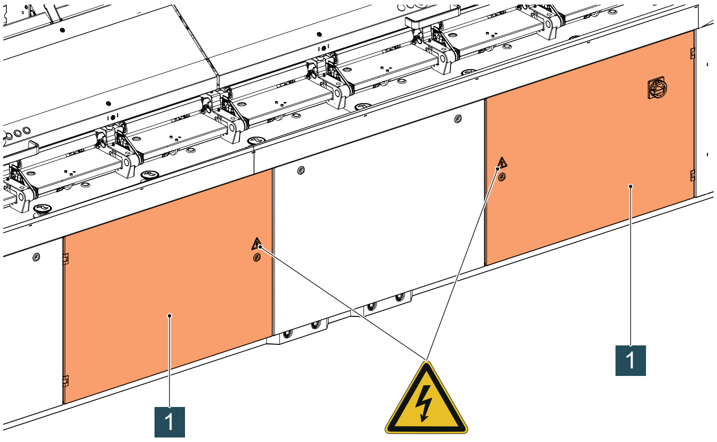


Figure 18: Danger zone at the control cabinet

The control cabinet contains the components under voltage. If the operator touches the components under voltage, injuries are possible to occur because of an electric shock.

Only approved personnel are permitted to open the control cabinet door 1.

2.9.2.5 Danger Zone at the Delivery Rollers

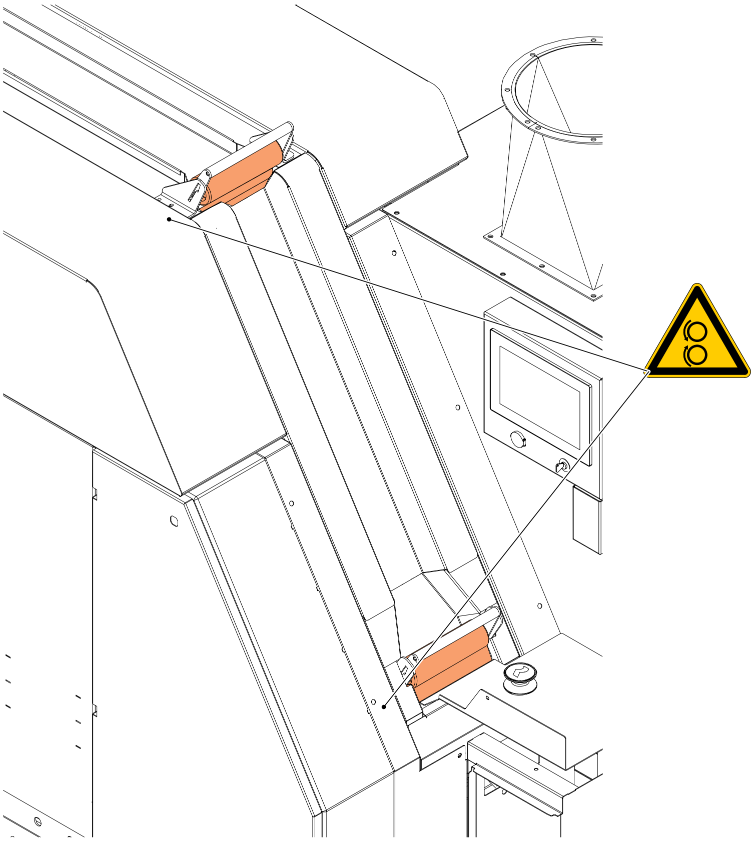


Figure 19: Delivery roller

When the machine is in operation, the 2 pairs of delivery rollers turn to move the slivers into the drafting system. The delivery rollers that turn are possible to cause injuries to the fingers if the operator puts a hand between 1 pair of the delivery rollers.

2.9.2.6 Danger Zone at the SERVOlap

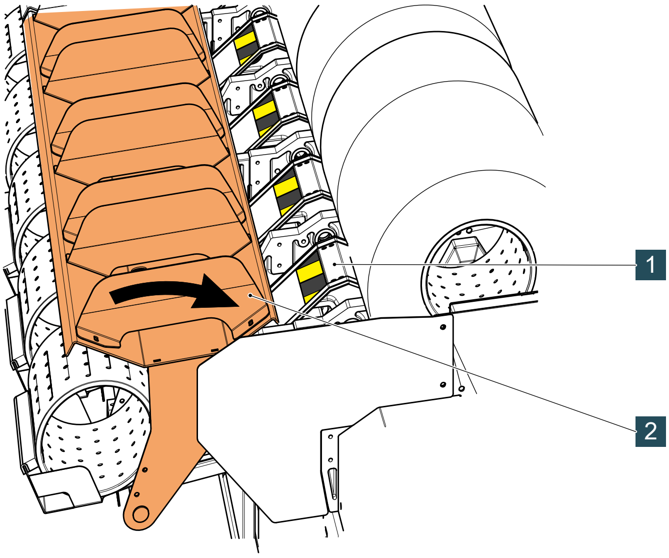


Figure 20: Danger zone at the SERVOlap

When the lap carrier 2 lowers, hands are possible to become squeezed between the lap carrier 2 and the roll-off plate 1.

2.9.2.7 Danger Zone at the Suction Duct of the ROBOlap

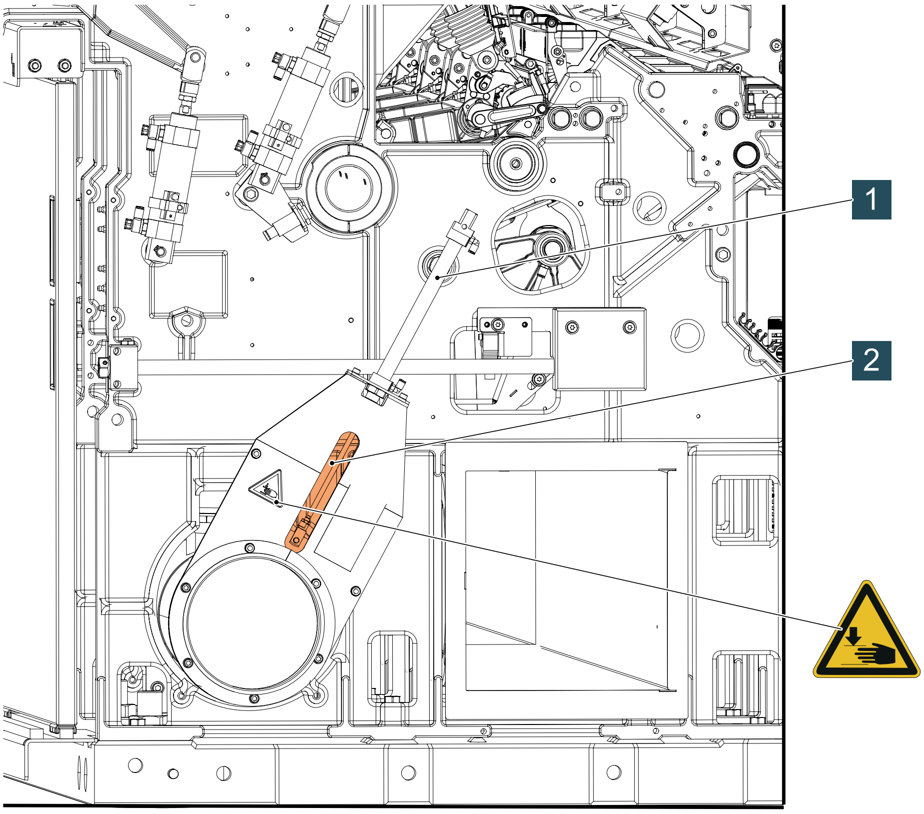


Figure 21: Danger zone at the ROBOlap

When the machine starts after seconds, the cylinder 1 lifts the slider up to let the air go from the ROBOlap to the fly duct. When the machine stops, the cylinder 1 lowers the slider to close the fly duct.

The operator must not put the hands into the slot 2 when the cylinder moves.

2.9.2.8 Danger Zone at the Suction Duct of the Drafting System

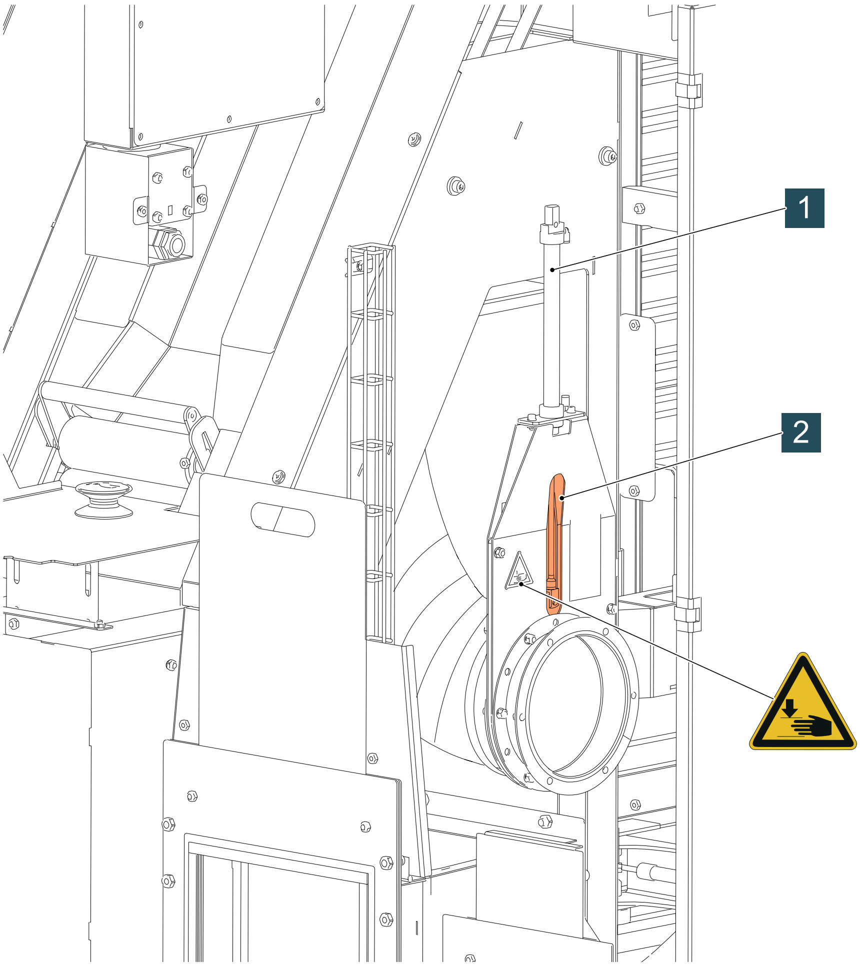


Figure 22: Suction duct of the drafting system

When the machine starts after seconds, the cylinder 1 lifts the slider to let the air go from the drafting system to the fly duct. When the machine stops, the cylinder 1 lowers the slider to close the fly duct.

The operator must not put the hands into the slot 2 when the cylinder is in operation.

2.9.2.9 Danger Zone at the Can Guide and the Can Changer

CD 600 mm

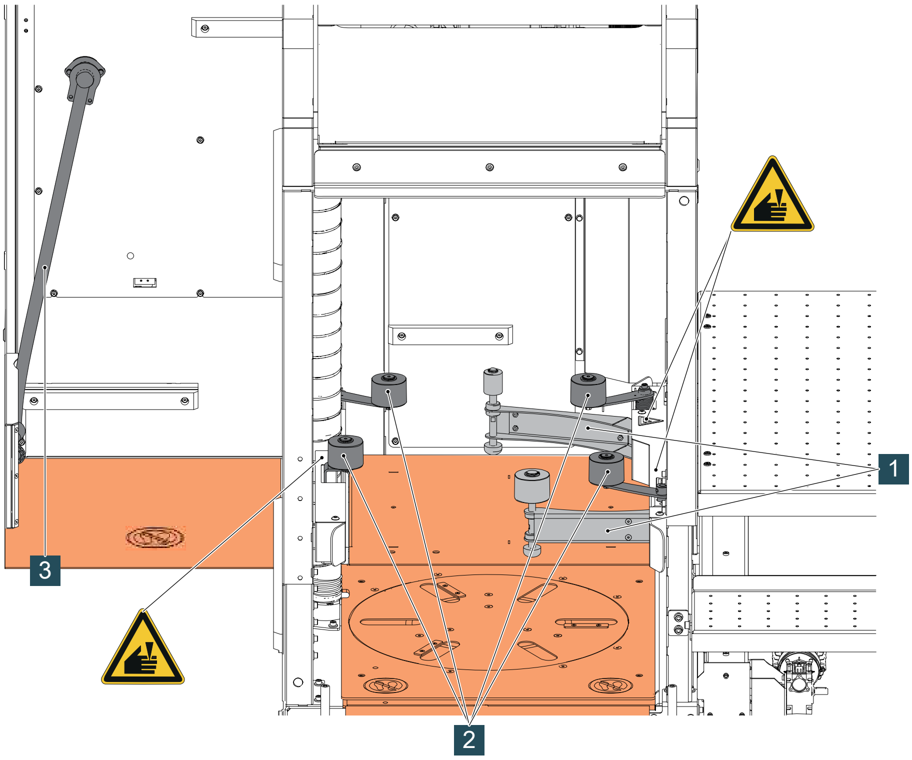


Figure 23: Can guide and can changer (CD 600 mm)

When the machine is in operation, the can changer moves the empty can to the can plate. The can guide levers 2 hold the can. The swivel arm 3 pushes an empty can between the can changer arms 1 when the can changer arms are back to the initial position.

If the operator is at the danger zones when the can changer arms 1 move, the can guide levers 2 move, or the swivel arm 3 moves, injuries to the operator are possible to occur.

CD 1 000 / 1 200 mm

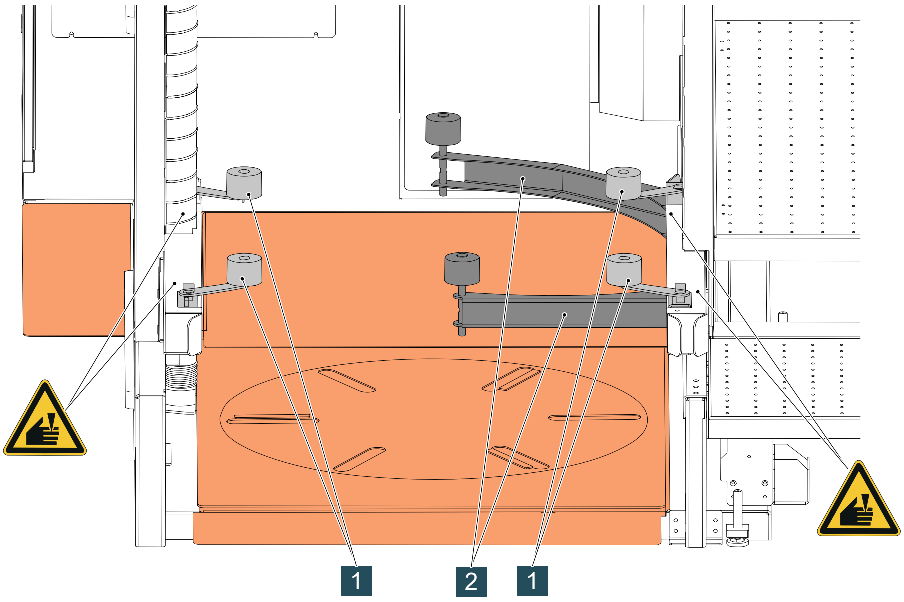


Figure 24: Can guide and can changer (CD 1000 / 1200 mm)

When the machine is in operation, the can changer moves the empty can to the can plate. The can guide levers 1 hold the can.

If the operator is at the danger zones when the can changer arms 2 move, or the can guide levers 1 move, injuries to the operator are possible to occur.

2.9.3 Safety Devices at the Machine

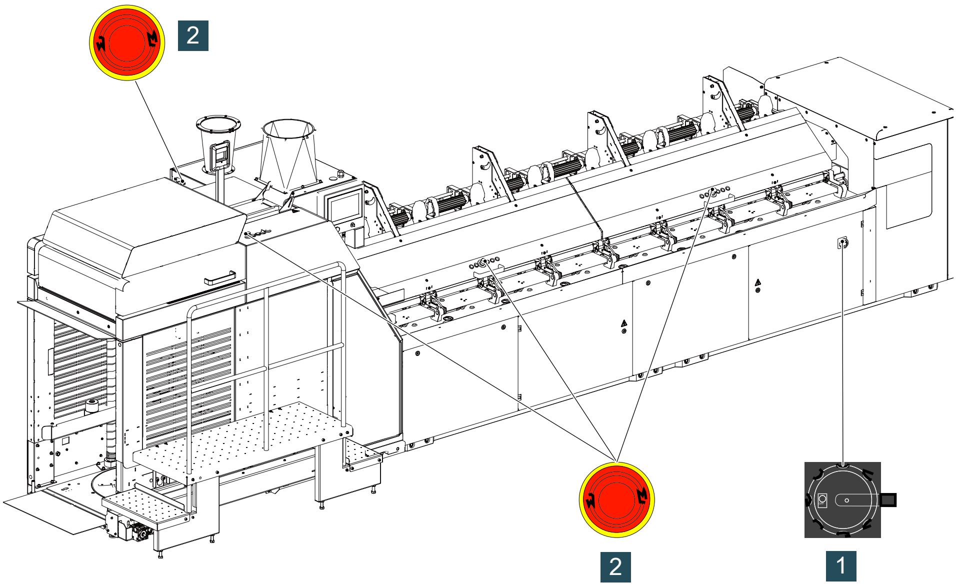


Figure 25: Safety devices

The machine has the safety devices that follow:

- Main switch 1
- Emergency stop button 2

Main Switch

The main switch has the position 0 or OFF and the position I or ON. To disconnect the power supply from the machine, the main switch is to be set to the position 0 or OFF. To connect the power supply to the machine, the main switch is to be set to the position I or ON. The main switch is not an emergency stop button.

The main switch is to be set to the position 0 or OFF and the main switch is to be padlocked before these procedures become done:

- Maintenance works
- Repair works

Emergency Stop Button

The emergency stop button is only to be used in an emergency. If the operator pushes the emergency stop button, the machine stops immediately.

To unlock the emergency stop button, the emergency stop button is to be turned.

2.9.4 Notice on the Machine Gearbox

The machine gearbox 1 is in the head stock.

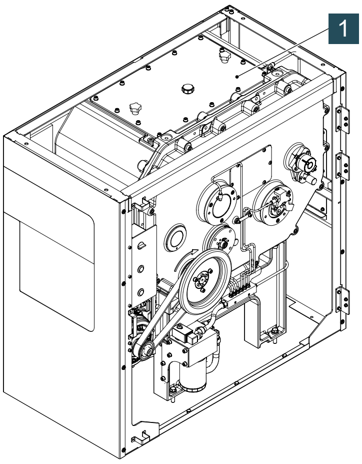


Figure 26: Cover of the gearbox

Only Rieter personnel or Rieter-approved personnel are permitted to adjust or change the settings in the gearbox. If 1 seal of the seals 2 at the gearbox is defective, Rieter does not accept any liability for damage to the gear unit.

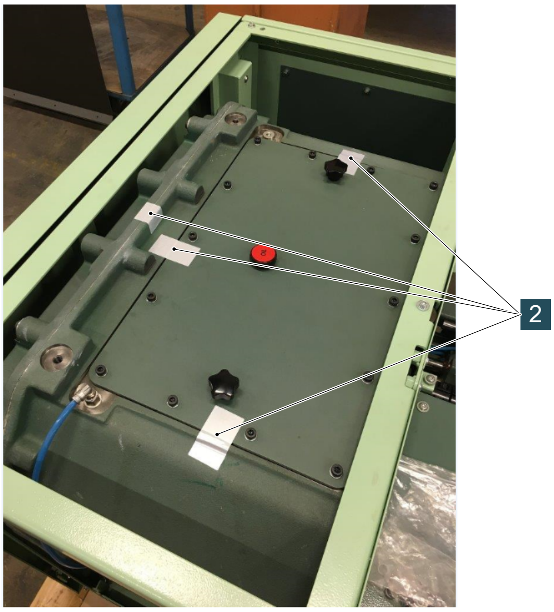


Figure 27: Seals at the gearbox

NOTICE

Modification or setting in the gear box!

Damage to the gear unit

▶ Do not modify anything or change settings in the gear box.

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3 Product Information

This chapter contains information about:

- The intended use of the machine
- The location of the identification plate
- The primary machine assemblies
- The basic machine functions
- The technical data
- The EC/EU Declaration of Conformity

3.1 Intended Use

The Rieter comber E 90 removes short fibers from the cotton.

The personnel that operate the machine must obey the instructions in this operation manual. All operations other than the operations given in this operation manual are **not** permitted.

3.2 Raw Materials

The machine only uses the textile raw materials that follow:

Cotton	From all sources
Man-made fibers	Natural and synthetic polymers
Maximum fiber length	65 mm
Maximum cut length	60 mm

3.3 Overview of the Machine

The figure that follows shows the primary parts of the machine.

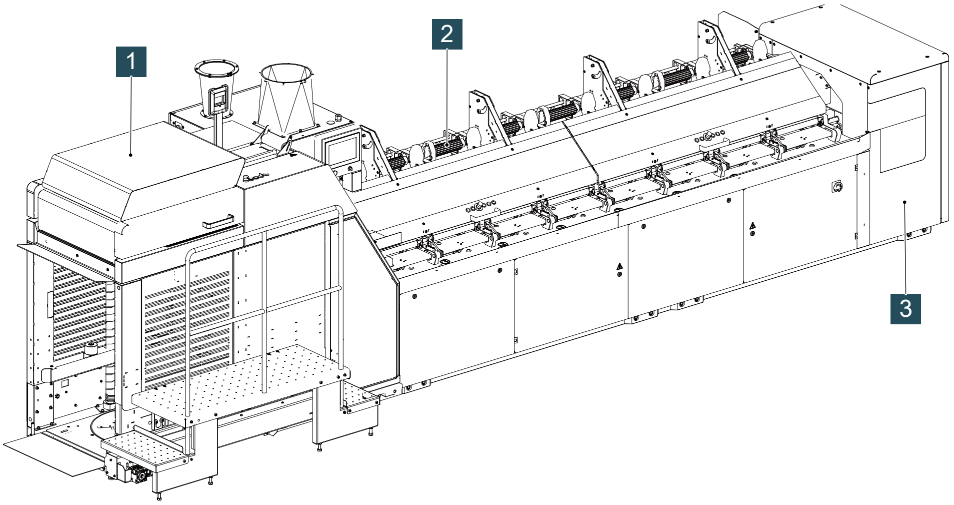


Figure 28: Overview of the machine

1	Delivery unit	2	Combing unit
3	Head stock		

3.3.1 Combing Units

The figure that follows shows the components of the combing units.

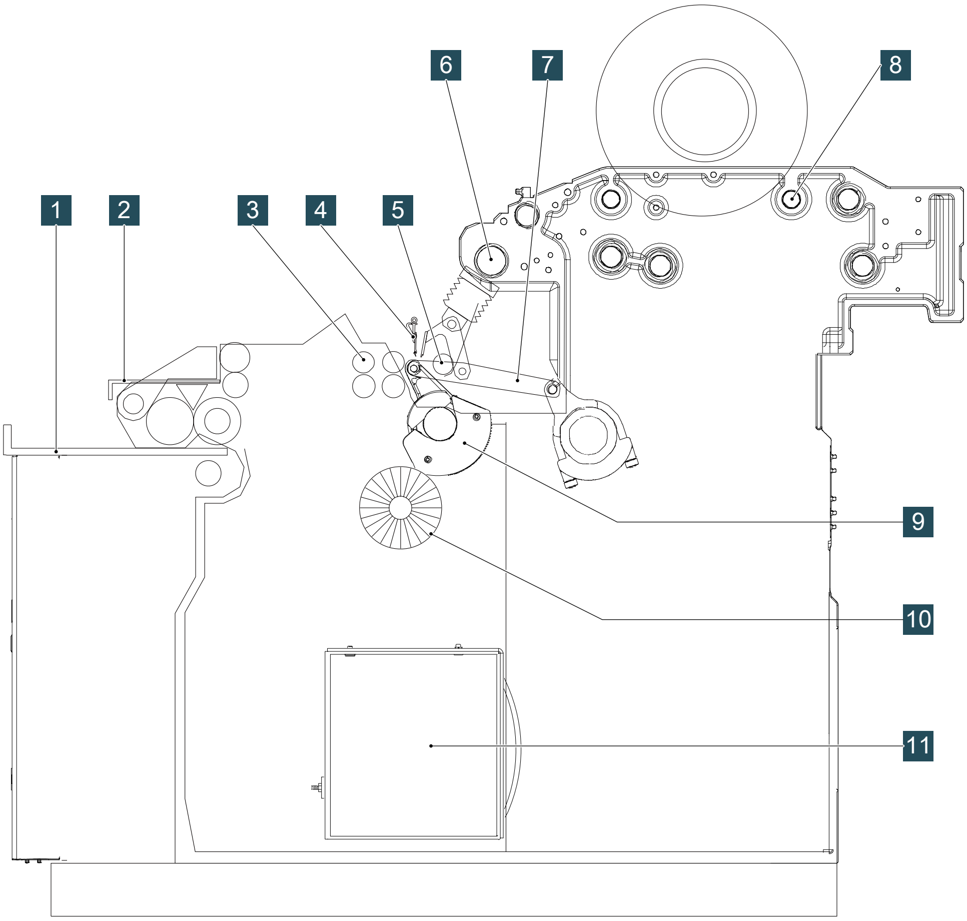


Figure 29: Combing unit

1	Delivery table with the holder for the top combs	2	Draw-off table
3	Detaching rollers	4	Top combs
5	Feed rollers	6	Eccentric
7	Nipper	8	Lap rollers
9	Circular comb	10	Circular-comb brush
11	Fly duct		

3.4 Function Description

This section contains the information about the machine functions.

3.4.1 Combing Process

The sections that follow contain an introduction to the 3 phases of the combing process.

Combing the Fiber Fringe

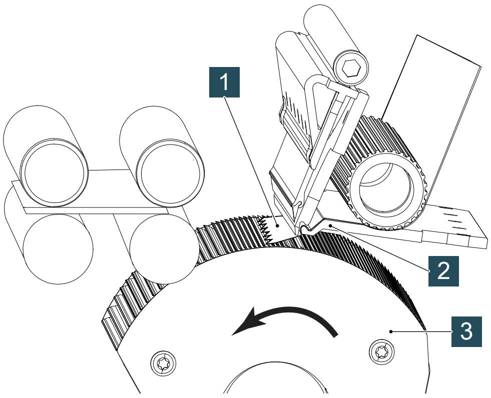


Figure 30: Fiber fringe

The nipper 2 is used for clamping the fiber fringe 1. The circular comb 3 combs the fiber fringe 1 to remove the short fibers and the neps. After the circular comb 3 combs the fibers, the fibers are parallel to each other.

Piecing the 2 Fiber Fringes

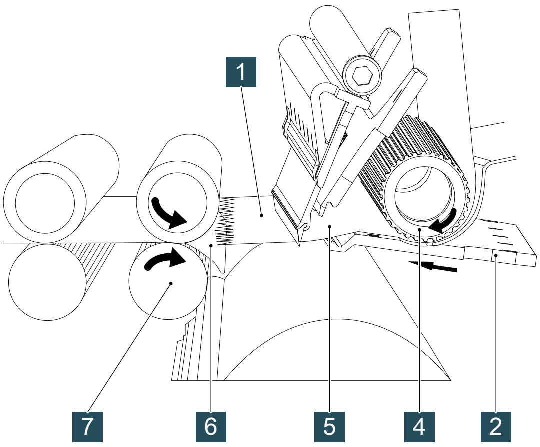


Figure 31: Piecing of the fiber fringes

When the nipper 2 moves forward, the top nipper opens. The feed cylinder 4 moves the selected feed amount between the detaching rollers 7. At the same time, the detaching cylinders move the combed fiber fringe rearward. The fiber fringes 1 and 6 have an overlap.

As a result, the piecing of the combed fibers is done at each combing process.

Detaching

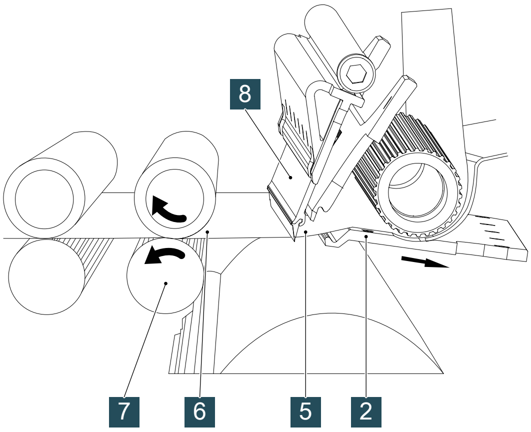


Figure 32: Detaching rollers

The detaching rollers 7 change the direction of rotation to pull off the fiber fringe 6. During the detaching, the fiber fringe 6 is pulled through the top comb 8. The nipper 2 moves rearward to do the detaching of the batt 5 at the same time. The top comb 8 combs the fiber fringe 6.

3.4.2 Lap Transport

The laps are automatically supplied to the comber with an overhead transport system. (for SERVOlap)

The laps are manually supplied to the comber with lap trolleys. (for SERVOtrolley)

To do the lap change, the user can push the button to eject the tubes and the button to supply laps. The batt piecing is done manually. (without ROBOlap)

The lap change and the batt piecing are done automatically. (with ROBOlap)

3.4.3 Automatic Lap Change (with ROBOlap)

The ROBOlap changes the lap and pieces the batt automatically.

The 4 steps of the lap change are as follows:

1. Start the ROBOlap.
2. Do the detaching of the batt and unwind the batt.
3. Replace the empty tube with a new lap.
4. Piece the lap.

Starting the ROBOlap

The procedure to start the ROBOlap is as follows:

1. To start the lap change procedure, monitor the lap with the number 8.

2. When 1 lap of the 8 laps is empty, the machine stops and the lap change procedure starts.
3. The pressure rollers lower while the machine is in production.

Doing the Detaching of the Batt and Unwinding the Batt

The procedure to do the detaching of the batt and to unwind the batt is as follows:

1. Do the detaching of the batt.
2. Unwind the remaining batt.
3. Prepare the detaching point at the machine.

Replacing the Empty Tube with a New Lap

The procedure to replace an empty tube with a new lap is as follows:

1. Remove the empty tube.
2. Put a new lap onto the lap roller.

Piecing the Lap

The procedure to piece a lap is as follows:

1. Find the batt end.
2. Do an overlap the 2 batt ends.
3. Piece the lap.

3.4.3.1 Lap Monitoring

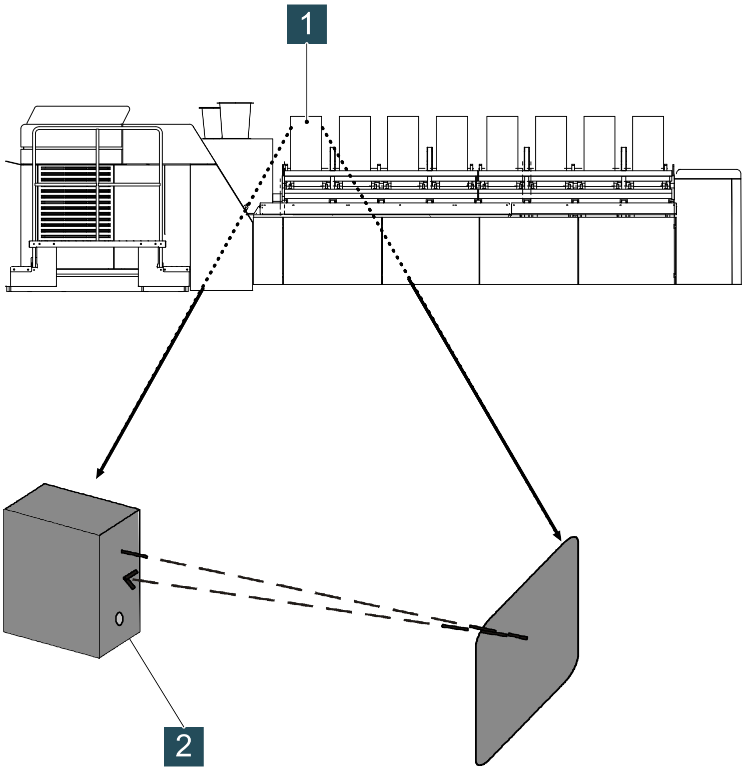


Figure 33: Lap monitoring unit

The monitoring unit of the lap 1 senses that the lap is gone. The LED 2 sends a signal when only 4 m of batt are left on the lap 1.

3.4.3.2 Pressure Lever (with ROBOlap)

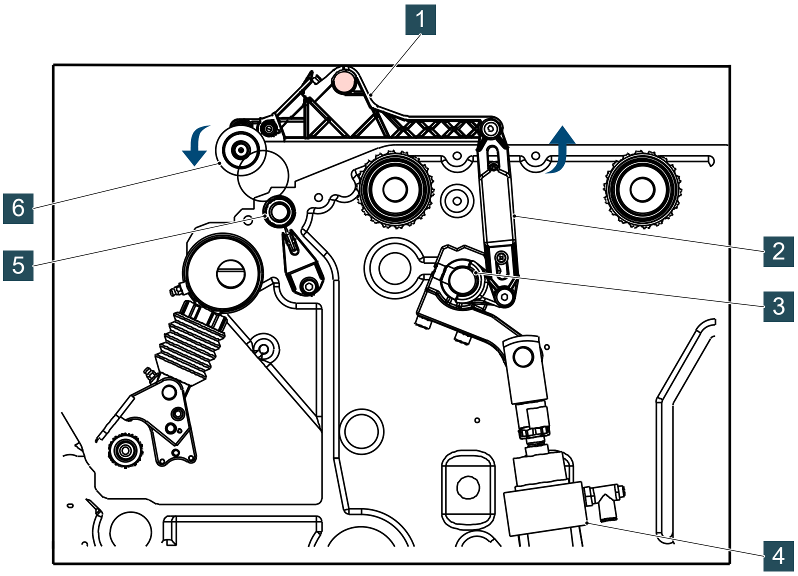


Figure 34: Pressure lever

The pressure lever does the clamping of the batt before and during the batt piecing process.

1. The pressure roller 6 lowers.
2. The pneumatic cylinder 4 applies tension to the pressure lever 2 in advance through the shaft 3.
3. The pressure lever 1 applies the force of the pressure lever 2 to the pressure roller 6.
4. The pressure roller 6 and the carrier roller 5 do the clamping of the batt.

3.4.3.3 Single Lap Monitoring

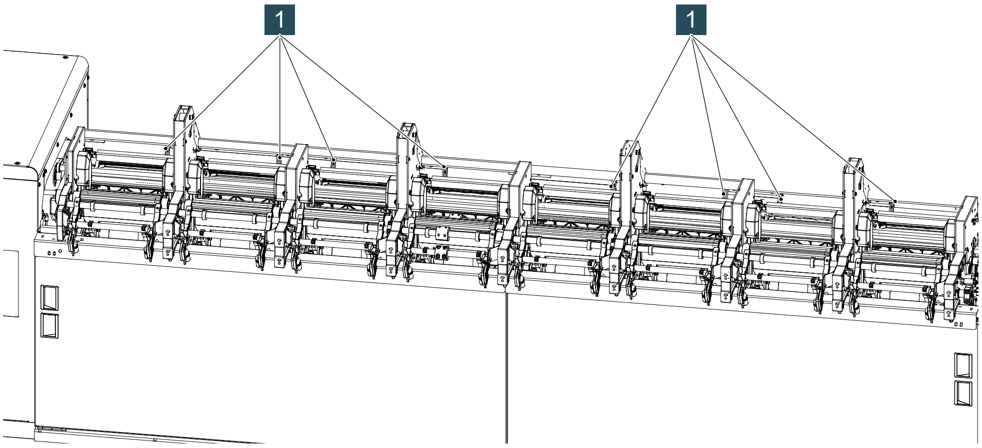


Figure 35: Sensors in the covers of the adjustable supports

The light scanners 1 are installed in the hoods.

The batt makes a reflection of the light beam at the light barrier. The black tube is not reflective, which shows that the tube is empty.

3.4.3.4 Batt Detaching

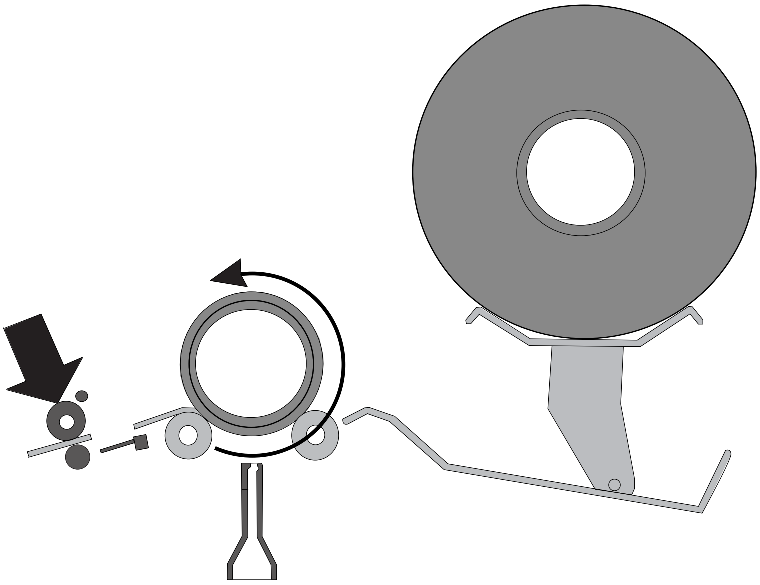


Figure 36: Batt detaching

To prevent that the nipper operates empty, the lap with the lowest batt quantity stops the machine and starts the lap change steps.

The tube levers push the almost empty tubes onto the lap rollers and prevent that the tubes move during the detaching.

The nipping line between the top carrier roller and the bottom carrier roller does the clamping of the batt. The tubes move rearward and do the detaching of the batt.

The tubes move forward and supply the remaining batt to the suction unit. The cleaning tubes move back and are out of the way for the new laps.

3.4.3.5 Unwinding the Remaining Batt

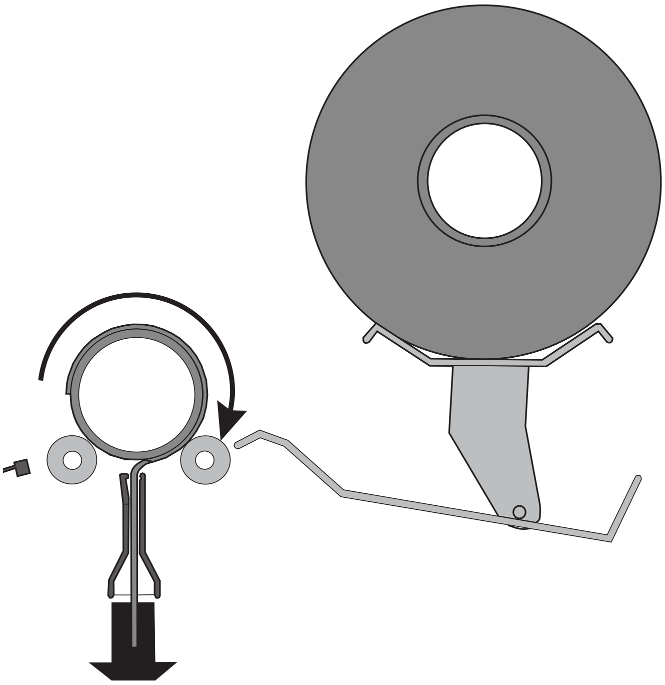


Figure 37: Remaining batt on the tube

The procedure to unwind the batt is as follows:

1. The lap rollers turn clockwise.
2. The remaining batt is unwound from the tubes.
3. The suction system removes the unwound batt. The batt moves to the external disposal device.

3.4.3.6 Removal of the Empty Tubes

The tube levers 1 move the current empty tube rearward.

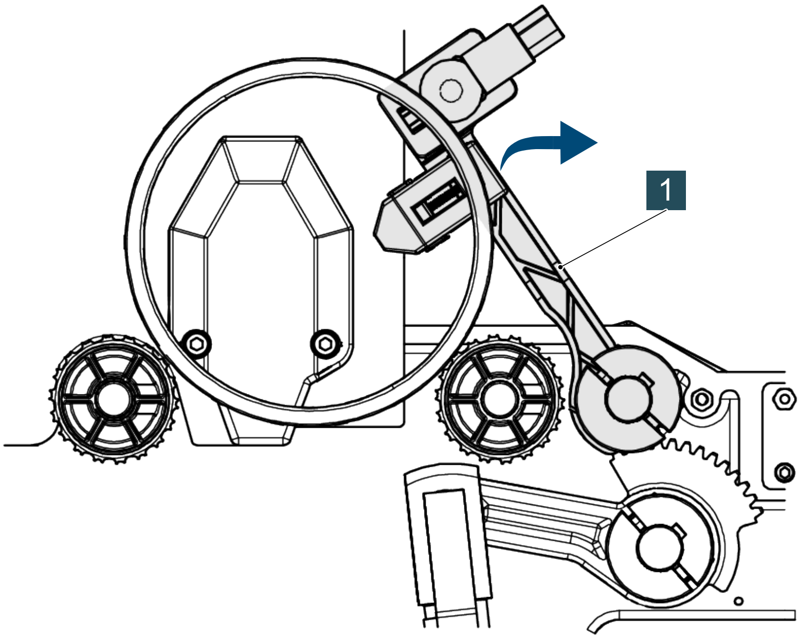


Figure 38: Tube lever

The empty tubes are put onto the empty tube carriers or onto the SERVOtrolley.

3.4.3.7 Supply of a New Lap onto the Lap Rollers

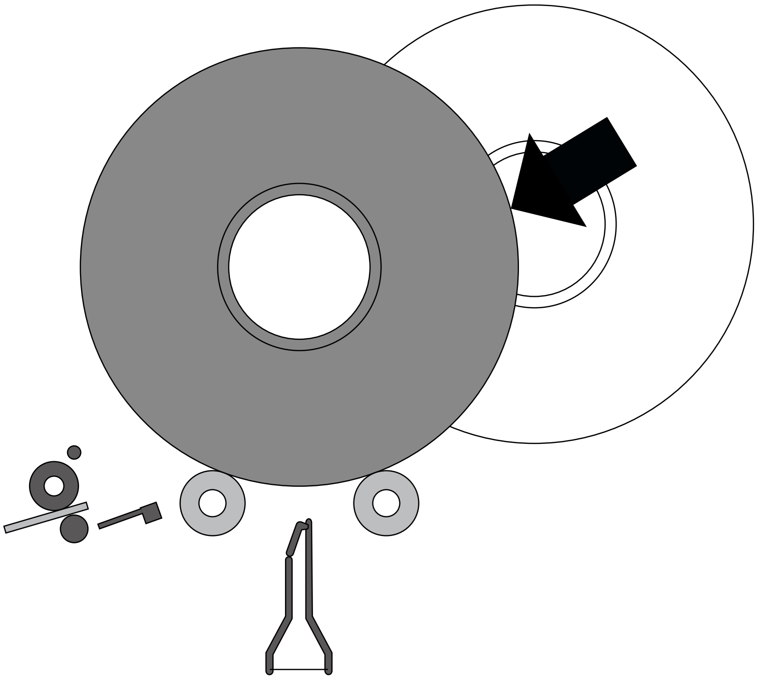


Figure 39: Supply of a new lap onto the lap rollers

The new laps move from the lap carrier and onto the lap rollers. (for SERVOlap)

The new laps move from the lap trolley onto the lap rollers. (for SERVOtrolley)

3.4.3.8 Doing a Search for the Batt Fringe

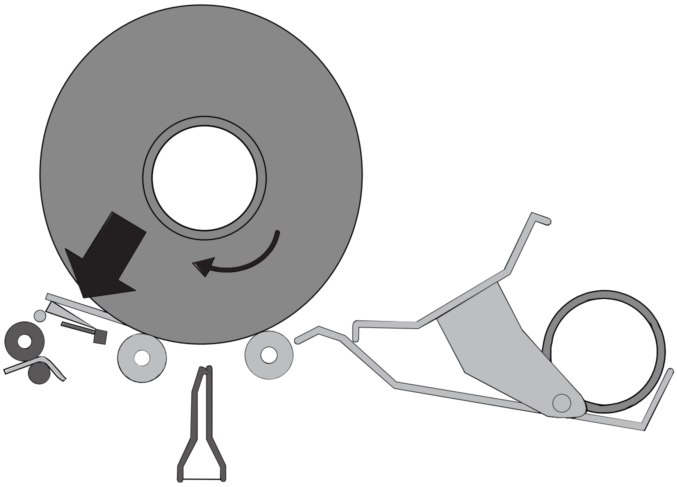


Figure 40: Batt fringe

For the batt to be pieced, the detaching of the batt from the lap is to be done. The procedure is as follows:

1. All batt fringes are to be prepared parallel in 1 line.
2. The suction ducts move up and start.
3. All laps turn forward and supply a short batt piece into the suction ducts.
4. The suction duct flaps close and do the clamping of all 8 batts.
5. The laps start to turn rearward and do the detaching of all 8 batts at the same time.
6. The laps start to turn forward. The suction ducts move down and open the clamping flaps. The suction system removes the remaining batt pieces.
7. The suction system is off.

3.4.3.9 Batt Piecing

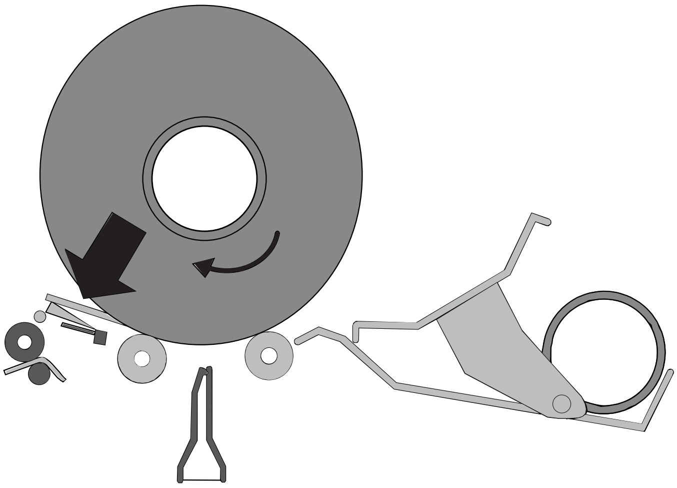


Figure 41: Position of the batt beginning

To connect the batt beginning with the detaching point on the machine side, the batt beginning is to be put over the detaching point. The piecing procedure is as follows:

1. The AEROpic lifts.
2. The lap rollers again move forward.
3. The AEROpic blows air out of the blowpipe.
4. When the batt beginning goes through the AEROpic, the AEROpic removes the batt beginning from the lap.
5. The AEROpic lowers and puts the batt beginning over the batt end.

Function

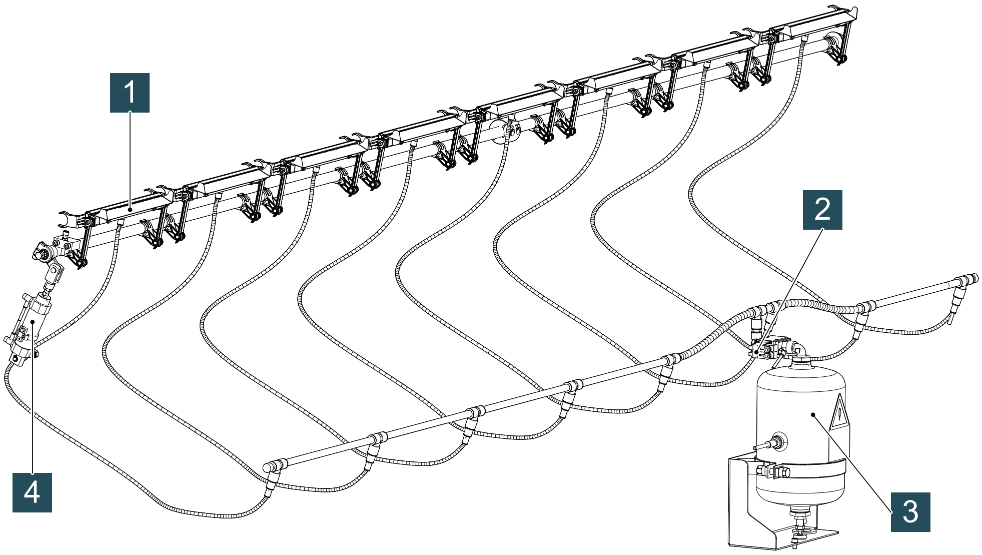


Figure 42: AEROpic

The pneumatic cylinder 4 at the end controls that the AEROpic lifts and lowers.

The AEROpic 1 is possible to be removed without tools.

The plastic components are attached with snap locks.

The solenoid valve 2 supplies the compressed air from the pressure tank 3 to the AEROpic 1.

The pressure tank 3 is always under pressure, also when the main switch is set to the position OFF.

The pressure tank 3 is installed with a vented pneumatic system.

3.4.4 Delivery Unit

3.4.4.1 Drafting System

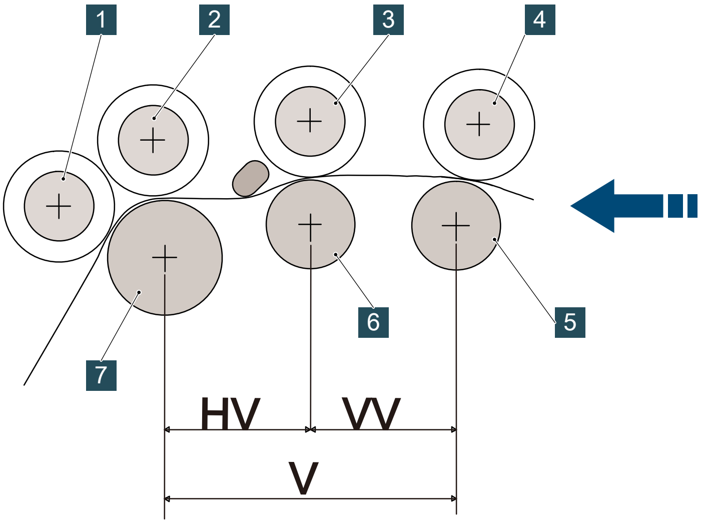


Figure 43: Drafting system

1	Deflection top roller	2	Top delivery roller
3	Top middle roller	4	Top feed roller
5	Feed cylinder	6	Middle cylinder
7	Delivery cylinder		

V: draft V (total draft)

VV: draft VV (break draft)

HV: draft HV (main draft)

Description The machine has a 4-over-3 drafting system.

The drafting system is used for drafts between 10.9 and 26 folds.

The top rollers 2, 3, and 4 push onto the cylinders 5, 6, and 7 mechanically with a specified pressure value. The related pair of rollers does the clamping of the cotton. The deflection top roller 1 moves the web to the web funnel.

The web funnel makes the web that comes out of the drafting system a sliver.

The delivery disks move the sliver into the sliver duct.

3.4.4.2 Sliver Monitoring

The Rieter Quality Monitor (RQM) monitors the quality of supplied sliver by 1 movable delivery disk and 1 non-movable delivery disk. If the fiber mass of the sliver between the delivery disks is more than the specified limit, the machine stops automatically. The RQM operates independently from the autoleveler.

Quality Data of the RQM

The quality data of the RQM are as follows:

- Sliver counts A%
- Sliver evenness CV%
- Spectrogram values
- Slub (thick places) values

3.4.4.3 Sliver Deposit and Can Change

The sliver is moved through the sliver duct of the coiler into the cans.

⚠ **CAUTION**

Tilting cans!

Risk of injuries because of the cans that are possible to move from the delivery plate or tilt.

▶ Do not go into the area around the cans.

When the can filling is at the specified value, the can changer 2 that holds the empty can moves forward to replace the full can. Then the full can is pushed out of the machine. The can guide 1 holds the new empty can to become prepared for the next coiling.

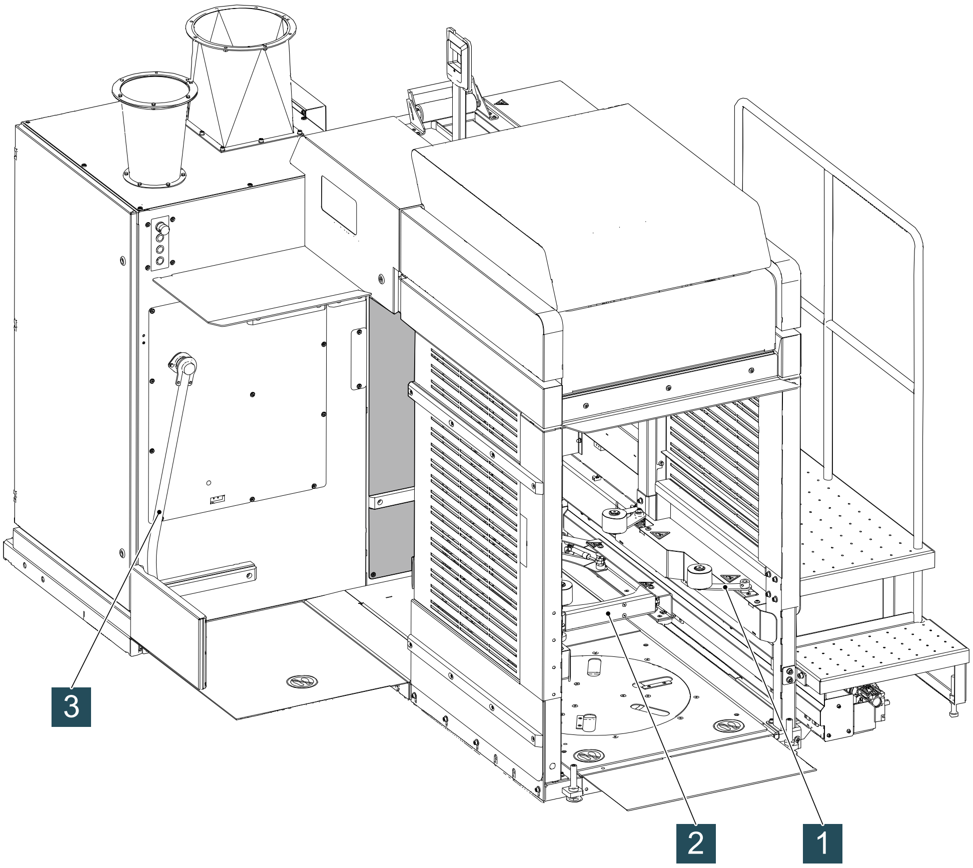


Figure 44: Delivery unit (CD 600 mm)

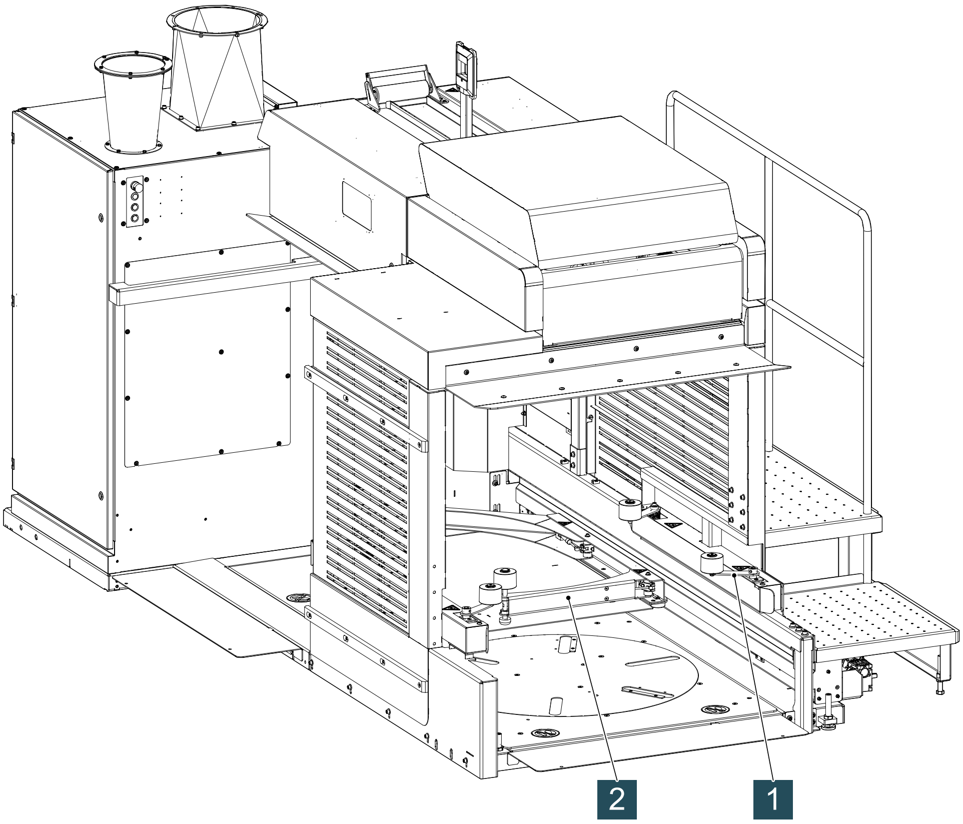


Figure 45: Delivery unit (CD 1000/1200 mm)

Can Change Procedure for Cans with CD 600 mm

When the can changer 2 moves back to the home position, the feeder 3 of the 2nd empty can pushes the 1st empty can into the can changer 2. Then the operator can put a new 2nd empty can into the machine.

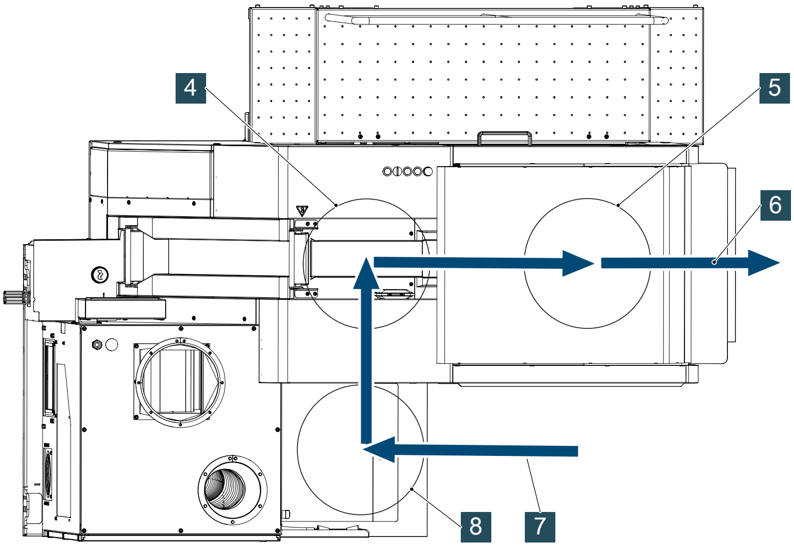


Figure 46: Can change procedure

4	1st empty can	5	Working can
6	Direction of the full can out of the machine (can changers)	7	Direction of the empty can into the machine (manually)
8	2nd empty can		

Can Change Procedure for Cans with CD 1000/1200 mm

When the can changer 2 moves back to the home position, the operator can put a new empty can into the machine.

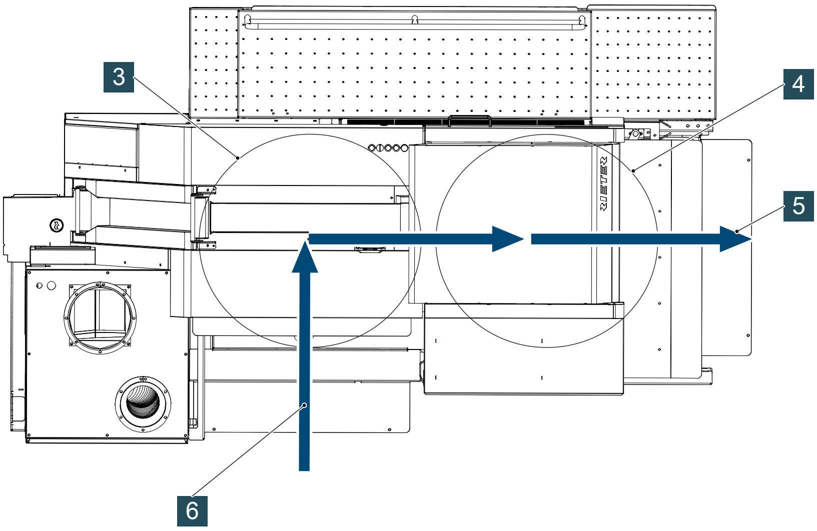


Figure 47: Can change procedure

3	1st empty can	4	Working can
5	Direction of the full can out of the machine (can changers)	6	Direction of the empty can into the machine (manually)

3.4.5 Suction Unit

The machine uses suction at the positions that follow:

- The noil suction at the fly duct
- The dust removal suction at the top rollers and bottom cylinders of the drafting system
- During the lap change, the suction to remove the remaining batt and to do a search for the batt beginning on the new lap (with ROBOlap)

The noil suction and drafting system suction come together in the central suction system.

The suction to remove the remaining batt and to do a search for the batt beginning on the new lap has a different suction system. (with ROBOlap)

3.5 Technical Data

The information about the technical data is for a standard machine.

3.5.1 Performance Characteristics

Noil Extraction	
In dependency on the short fiber content in the raw material	Approx. 8 – 25 %

Type	
Related to the noil extraction and the trials	– Forward feed (Recommended) – Rearward feed

Feed Amount	
Material supplied for each combing cycle (nip).	4.3 – 5.9 mm
Sliver weight at delivery	3.5 – 7 ktex
Revolutions of the circular-comb shaft	400 – 600 nips/min

Drafting System Load	
Load on each top roller	320 – 440 N

Drafting System	
Break draft	1.15 – 1.7
Total draft	10.9 – 26

Nipping Surface Distance in the Drafting System	
Main draft	37 – 72 mm
Break draft	35 – 76 mm

3.5.2 Dimensions

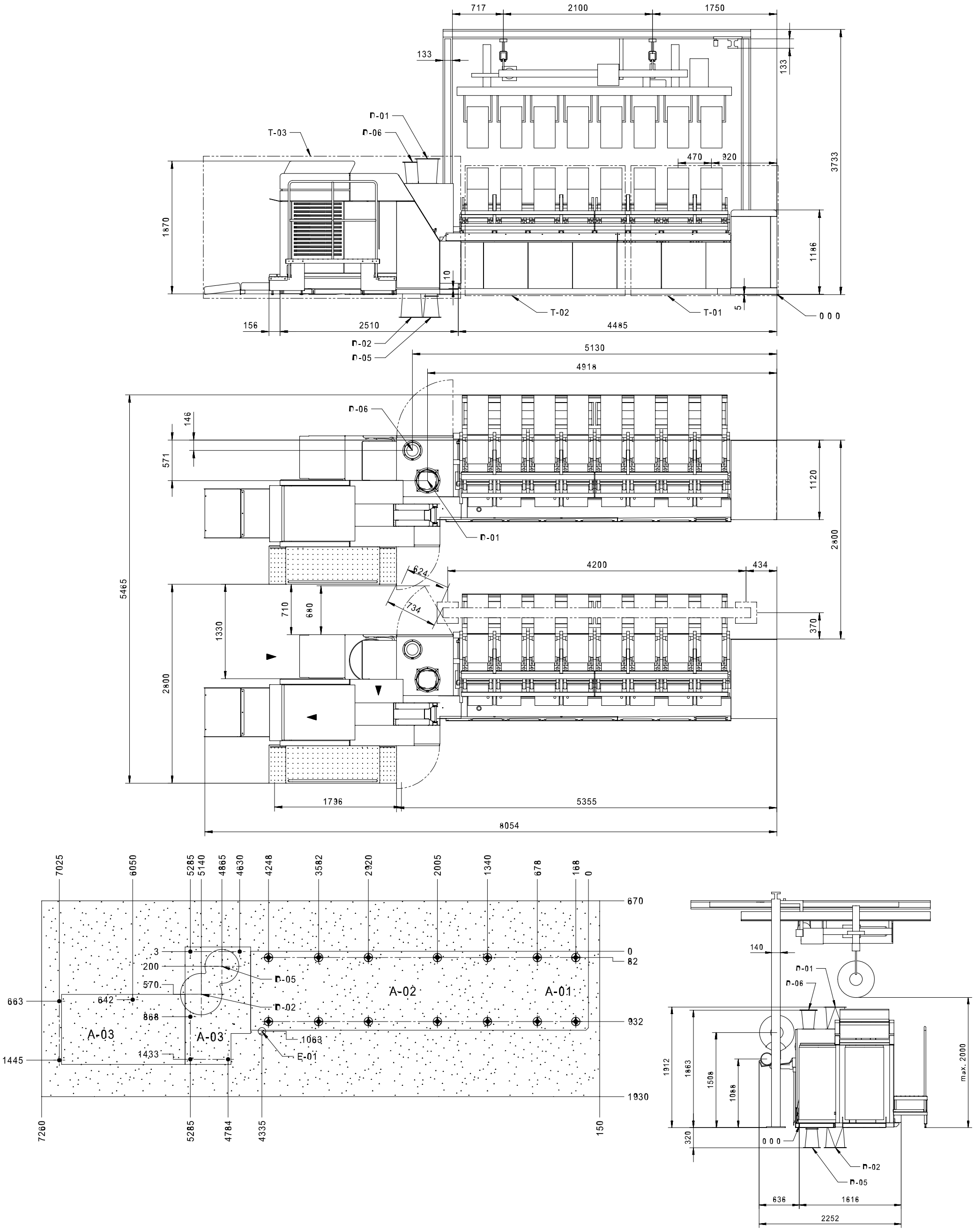

717
2100
1750
133
133
3733
D-01
D-06
T-03
470
920
1870
1186
10
5
T-02
T-01
0 0 0
156
2510
4485
D-02
D-05
5130
4918
D-06
146
571
1120
D-01
2800
5465
624
734
4200
434
710
680
1330
370
2800
1796
5355
8054
7025
6050
5285
5140
4865
4630
4248
3582
2920
2005
1340
678
168
0
670
3
200
570
D-05
A-02
A-01
0
82
663
642
D-02
868
932
A-03
A-03
1063
1433
E-01
1445
1930
7260
5285
4784
4335
150
140
D-01
D-06
1912
1863
1508
1088
max. 2000
320
0 0 0
D-02
D-05
636
1616
2252

Figure 48: CD 600 mm, for SERVOlap, on the floor

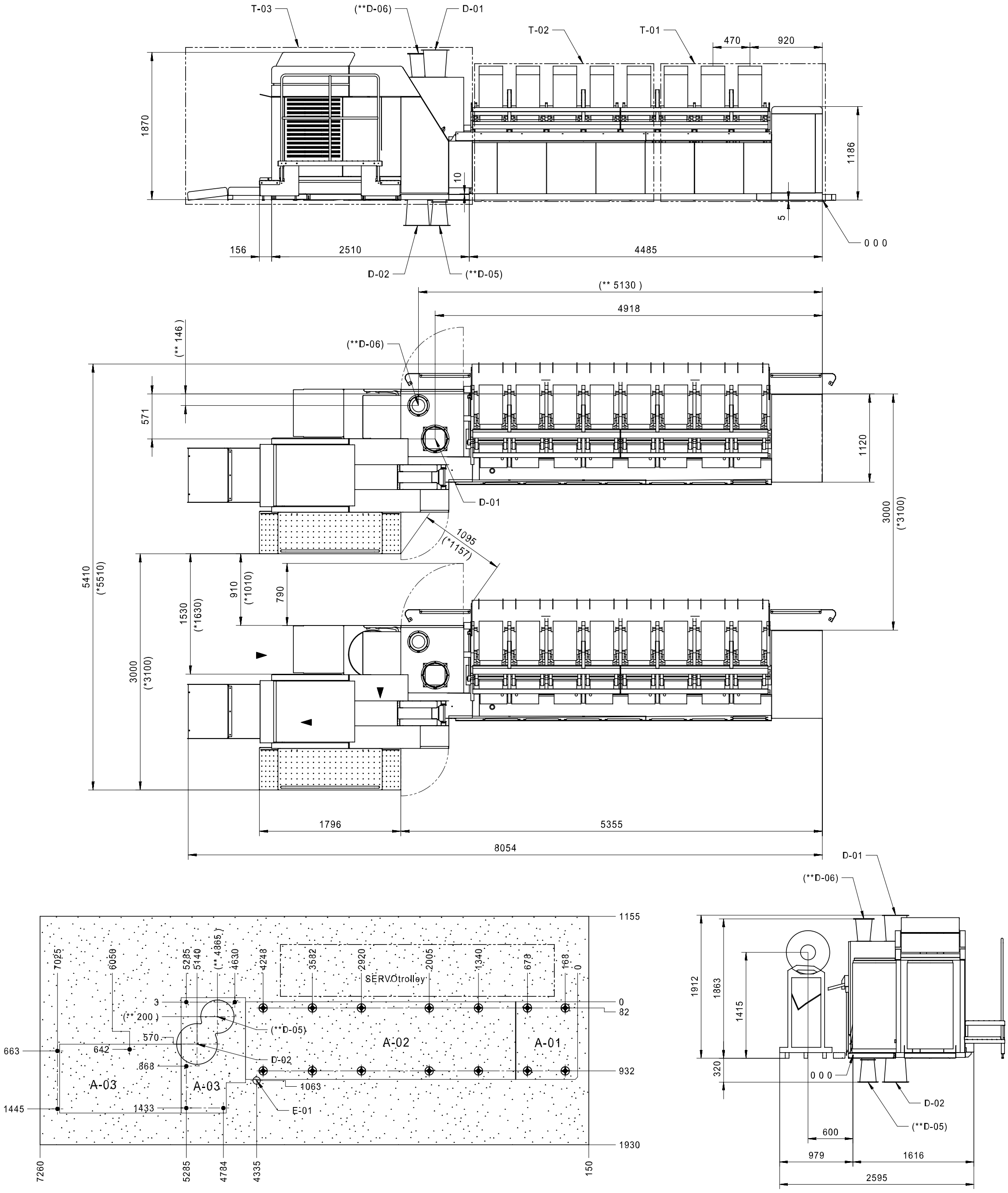

T-03
(**D-06)
D-01
T-02
T-01
470
920
1870
1186
10
5
0 0 0
156
2510
4485
D-02
(**D-05)
(** 5130)
4918
(** 146)
(**D-06)
571
1120
D-01
3000
(*3100)
1095
(*1157)
5410
(*5510)
910
(*1010)
790
1530
(*1630)
3000
(*3100)
1796
5355
8054
D-01
(**D-06)
1155
7025
6050
5235
5140
(** 4365)
4630
4248
3582
2920
2005
1340
678
168
0
SERVOtrolley
3
(** 200)
(**D-05)
570
0
82
663
642
868
D-02
A-02
A-01
932
A-03
A-03
1063
1445
1433
E-01
1930
7260
5285
4784
4335
150
1912
1863
1415
320
0 0 0
D-02
(**D-05)
600
979
1616
2595

Figure 49: CD 600 mm, for SERVOtrolley from the gearbox side only, on the floor

*SERVOtrolley from the 2 sides of the machine

**Only necessary with the ROBOlap option

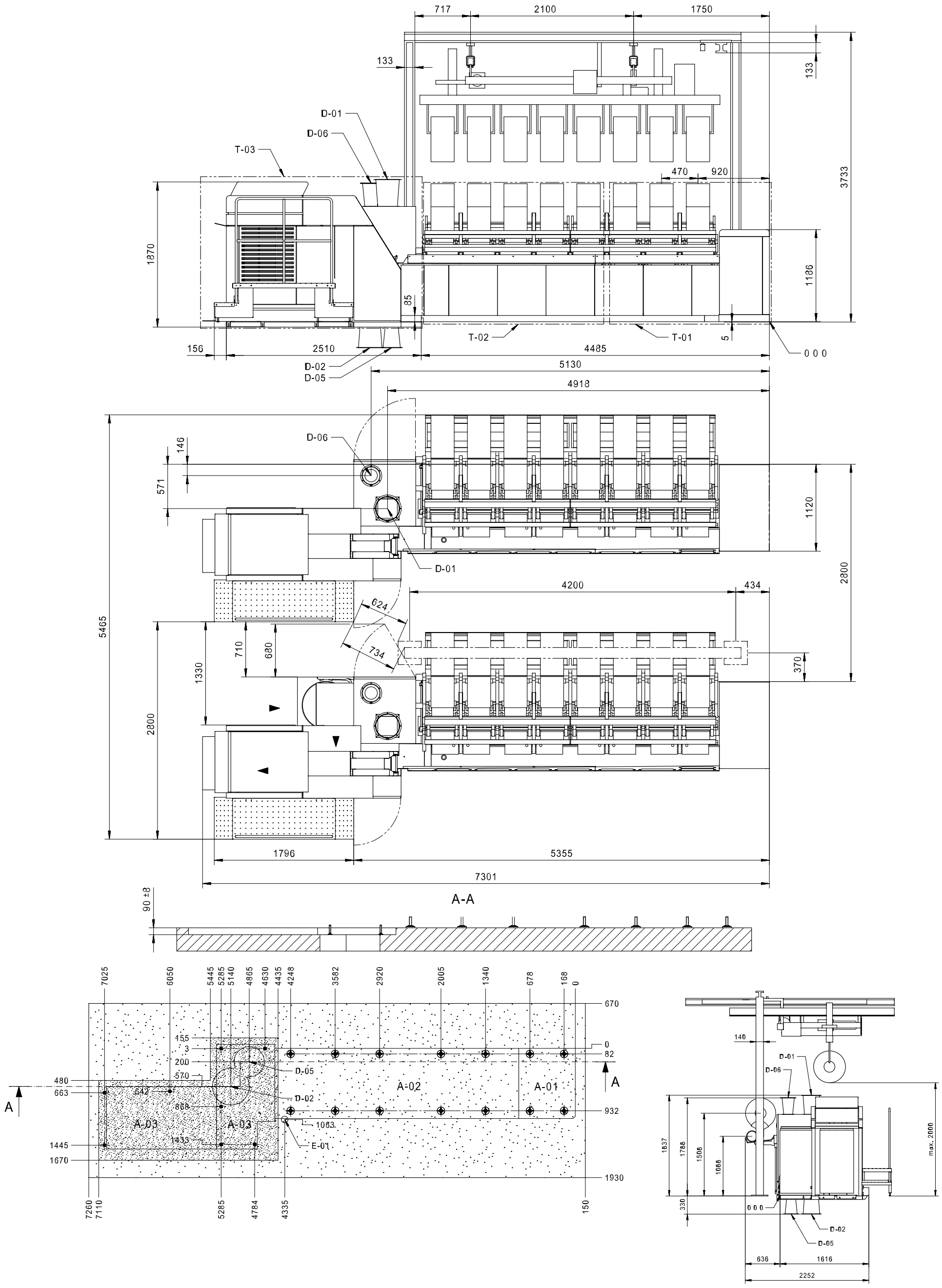

717
2100
1750
133
D-01
D-06
T-03
470
920
3733
1870
1186
85
T-02
T-01
5
156
2510
4485
0 0 0
D-02
D-05
5130
4918
146
571
1120
D-01
4200
434
2800
5465
624
734
710
680
1330
370
2800
1796
5355
7301
A-A
90 ±8
7025
6050
5445
5285
5140
4865
4630
4435
4248
3582
2920
2005
1340
678
168
0
670
155
3
200
570
480
663
542
868
1445
1670
1933
A-03
A-03
A-02
A-01
D-05
D-02
1063
E-01
0
82
932
1930
A
A
7260
7110
5285
4784
4335
150
140
D-01
D-06
1837
1786
1566
1086
330
max. 2660
0 0 0
D-02
D-05
636
1616
2252

Figure 50: CD 600 mm, for SERVOlap, recessed in the floor

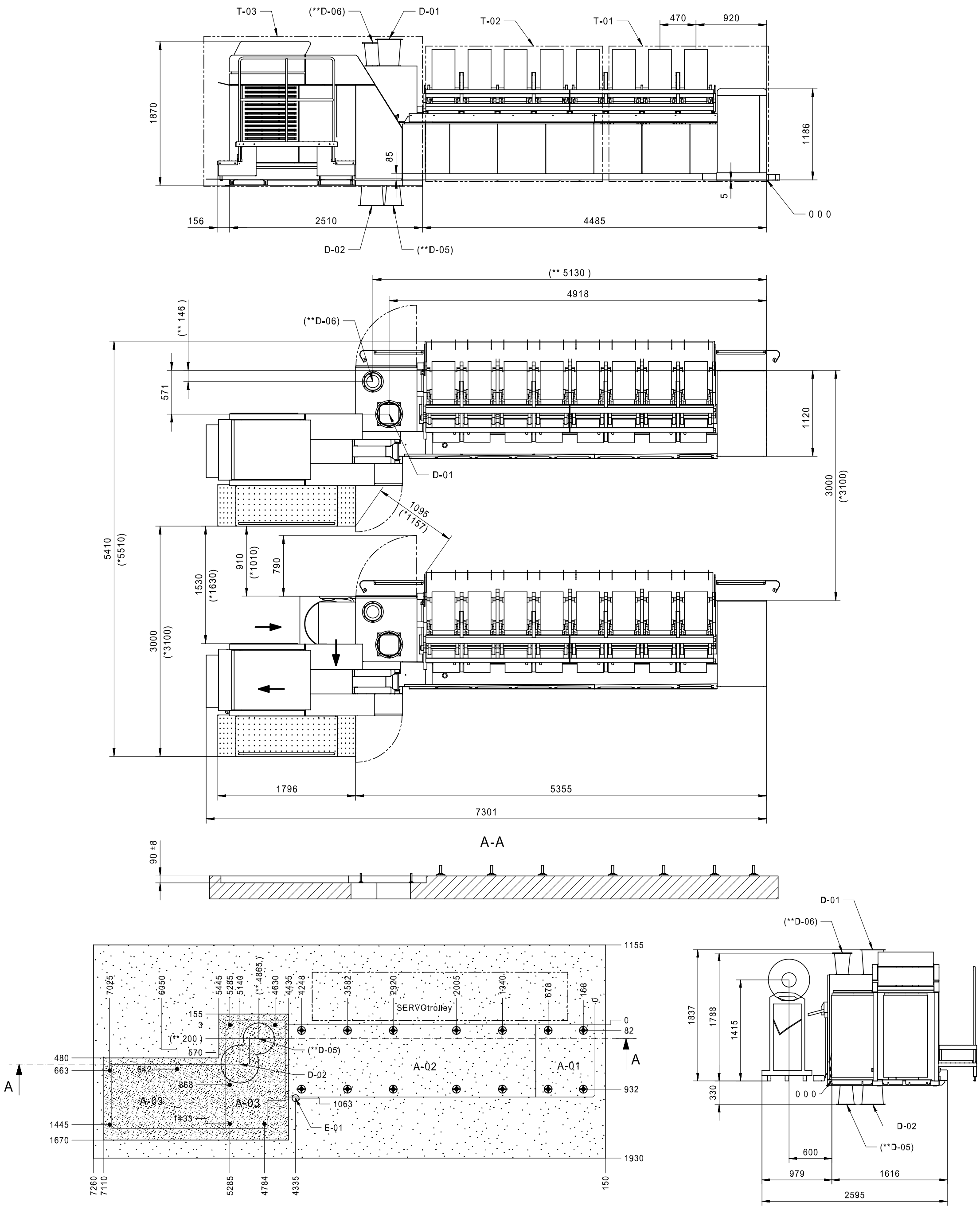

T-03
(**D-06)
D-01
T-02
T-01
470
920
1870
85
1186
5
0 0 0
156
2510
4485
D-02
(**D-05)
(** 5130)
4918
(** 146)
571
(**D-06)
D-01
1120
3000
(*3100)
1095
(*1157)
5410
(*5510)
1530
(*1630)
910
(*1010)
790
3000
(*3100)
1796
5355
7301
A-A
90 ±8
D-01
(**D-06)
1155
7025
6050
5445
5285
5140
(** 4865)
4630
4435
4248
3582
2920
2005
1340
678
168
0
SERVOtrolley
155
3
(** 200)
570
480
663
642
868
A-03
A-03
1433
1445
1670
(**D-05)
D-02
A-02
A-01
1063
E-01
0
82
932
1930
A
A
7260
7110
5285
4784
4335
150
1837
1788
1415
330
0 0 0
D-02
(**D-05)
600
979
1616
2595

Figure 51: CD 600 mm, for SERVOtrolley from the gearbox side only, recessed in the floor

*SERVOtrolley from the 2 sides of the machine

**Only necessary with the ROBOlap option

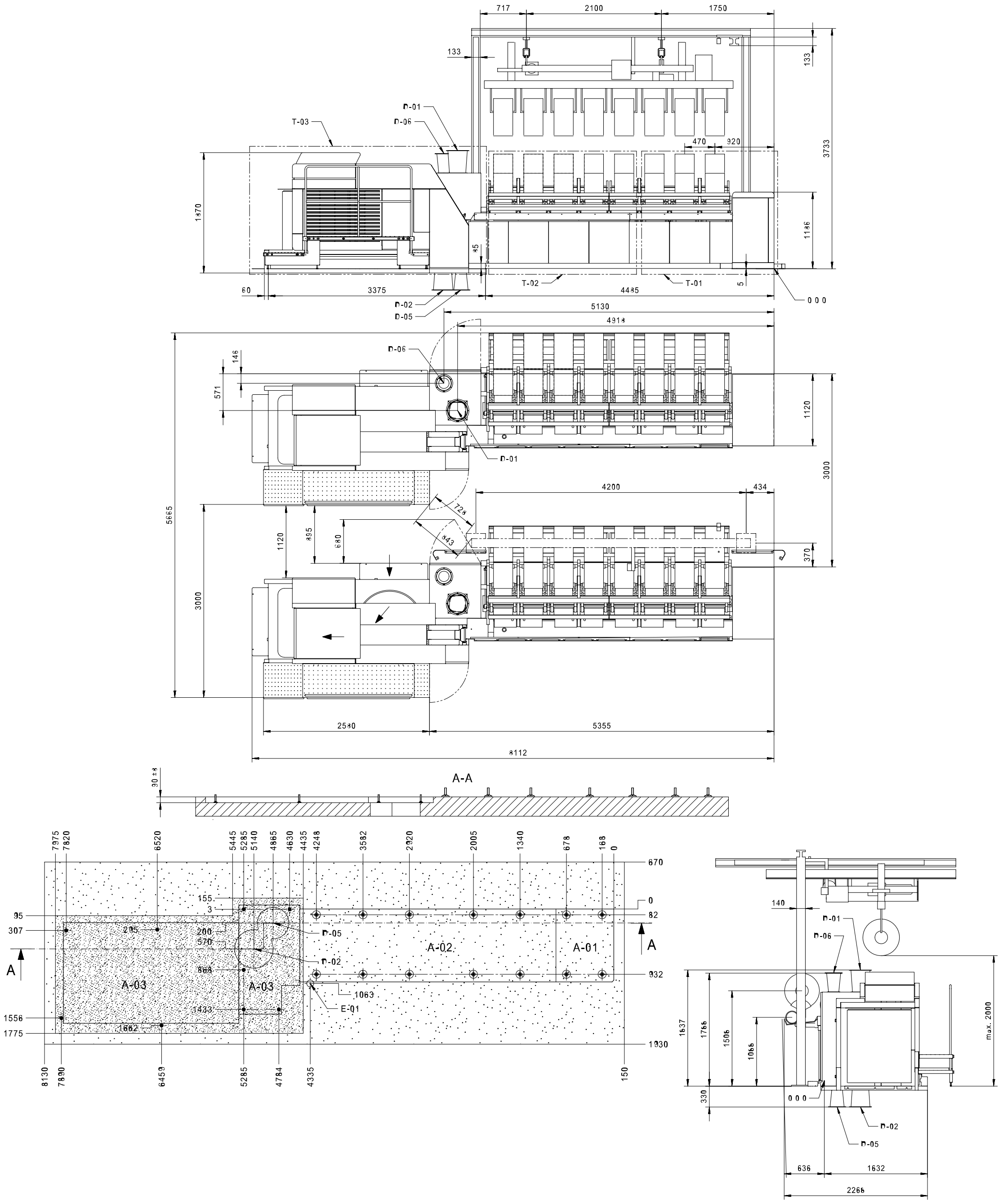

717
2100
1750
133
3733
470
920
1146
1470
T-03
P-01
P-06
T-02
T-01
60
3375
4485
5130
P-02
P-05
0 0 0
4914
146
571
1120
3000
5665
4200
434
724
443
895
680
370
2540
5355
8112
A-A
30 ±4
7975
7820
6520
5445
5285
5140
4865
4630
4435
4248
3582
2020
2005
1340
678
168
0
670
82
932
1930
95
307
1556
1775
155
3
205
200
570
868
1433
1662
A-03
A-02
A-01
P-05
P-02
1063
E-01
A
8130
7830
6453
5285
4784
4335
150
140
P-01
P-06
1637
1766
1506
1066
330
max. 2000
636
1632
2266

Figure 52: CD 1000 mm, for SERVOlap, recessed in the floor

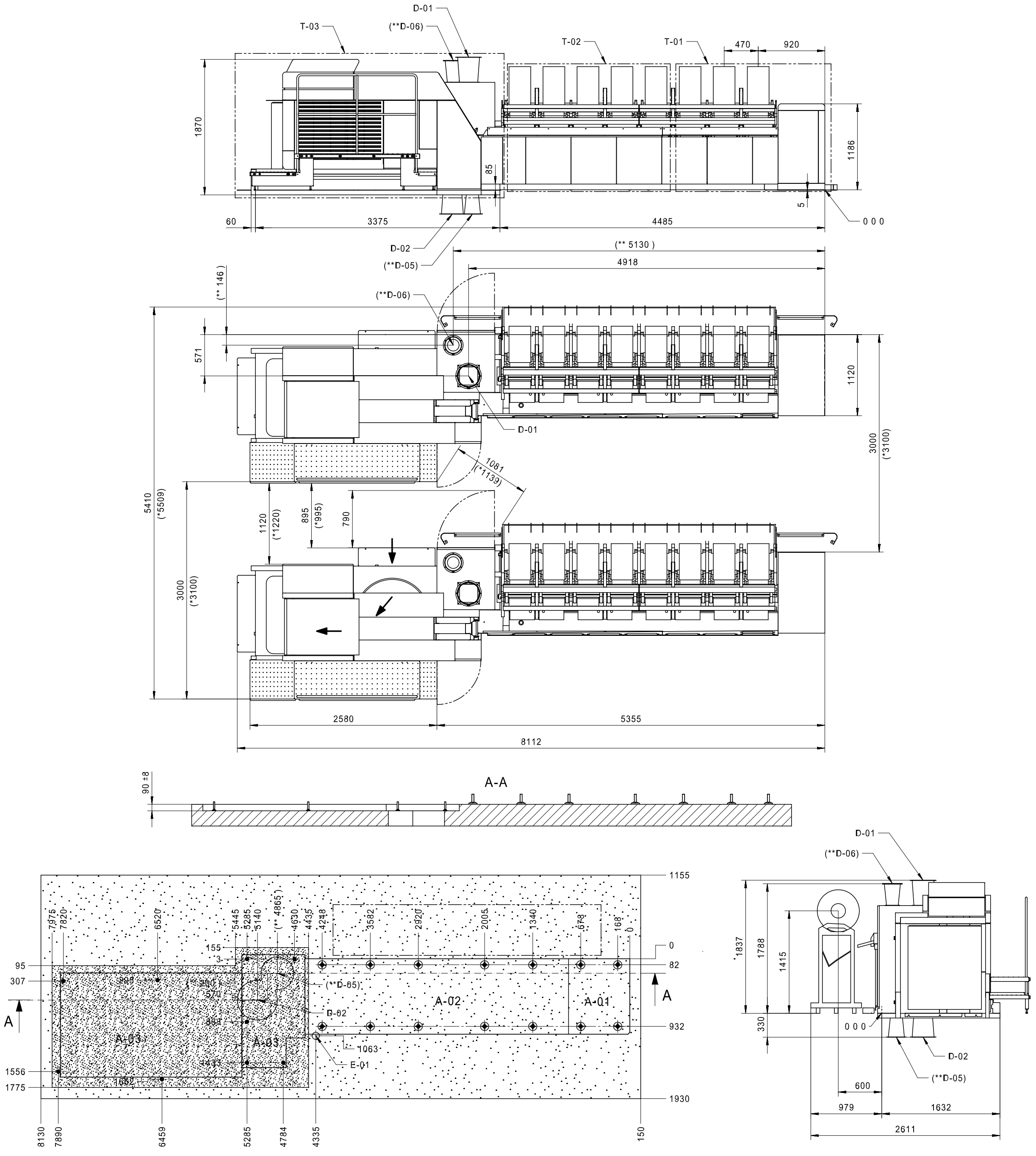

D-01
T-03
(**D-06)
T-02
T-01
470
920
1870
1186
85
5
60
3375
4485
0 0 0
D-02
(**D-05)
(** 5130)
4918
(** 146)
(**D-06)
571
1120
D-01
3000
(*3100)
1061
(*1139)
5410
(*5509)
1120
(*1220)
895
(*995)
790
3000
(*3100)
2580
5355
8112
90 ±8
A-A
1155
0
82
932
1930
95
307
1556
1775
A
A
A-03
A-03
A-02
A-01
(**D-05)
D-02
1063
E-01
7976
7820
6520
5445
5285
5140
(** 4865)
4630
4435
4248
3582
2920
2005
1340
678
168
155
3
8130
7890
6459
5285
4784
4335
150
1837
1788
1415
330
600
979
1632
2611

Figure 53: CD 1000 mm, for SERVOtrolley from the gearbox side only, recessed in the floor

*SERVOtrolley from the 2 sides of the machine

**Only necessary with the ROBOlap option

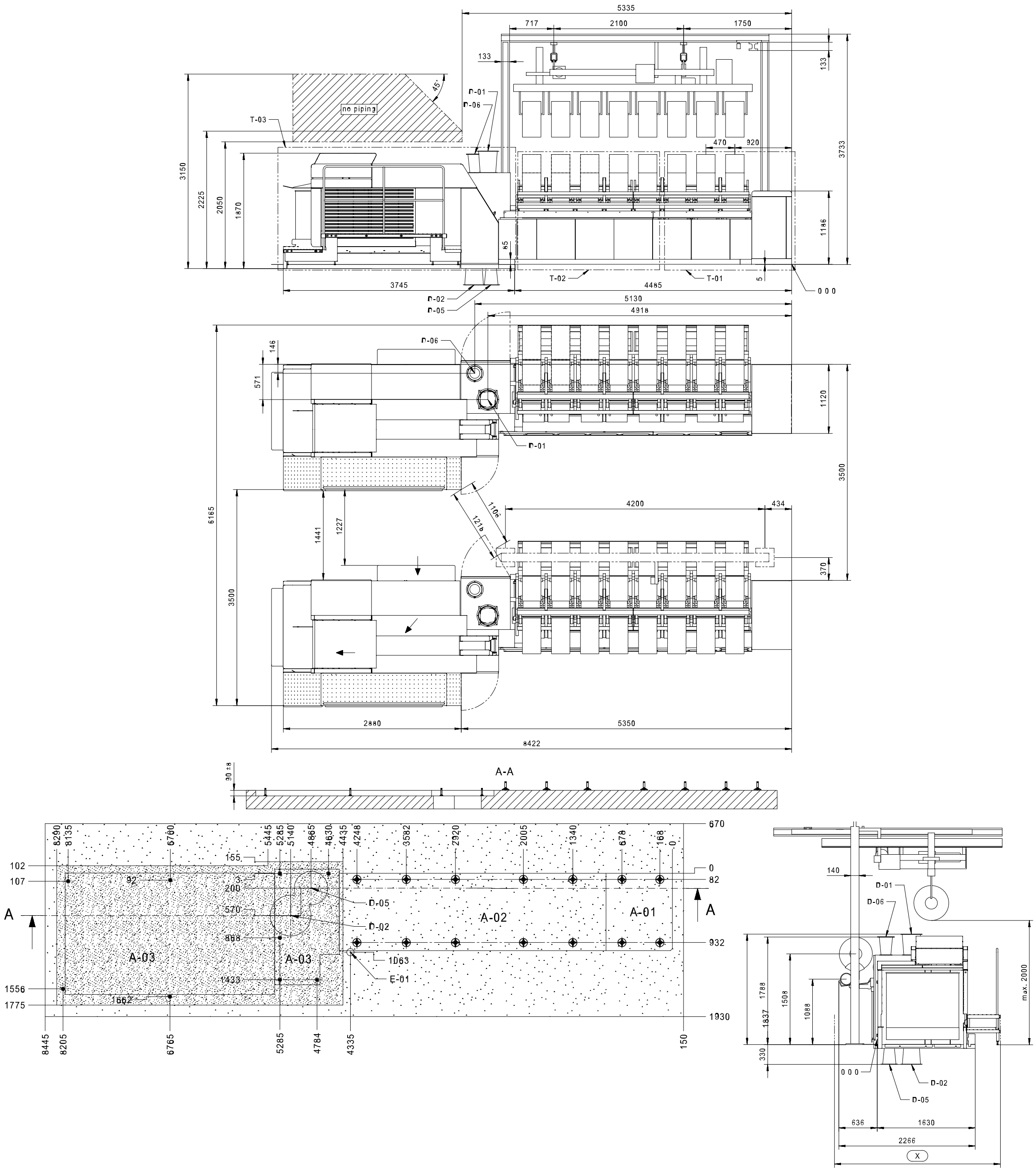

5335
717
2100
1750
133
no piping
45°
T-03
D-01
D-06
3150
2225
2050
1870
3733
470
920
1186
85
3745
T-02
4485
T-01
5
0 0 0
D-02
D-05
5130
4918
146
571
1120
3500
6165
1441
1227
1106
1218
4200
434
370
3500
2880
5350
8422
A-A
30 ±8
670
0
82
932
1930
102
107
1556
1775
A
A-03
A-02
A-01
E-01
8445
8205
6765
5285
4784
4335
150
140
1837
1788
1508
1088
330
max. 2000
636
1630
2266
X

Figure 54: CD 1200 mm, for SERVOlap, recessed in the floor

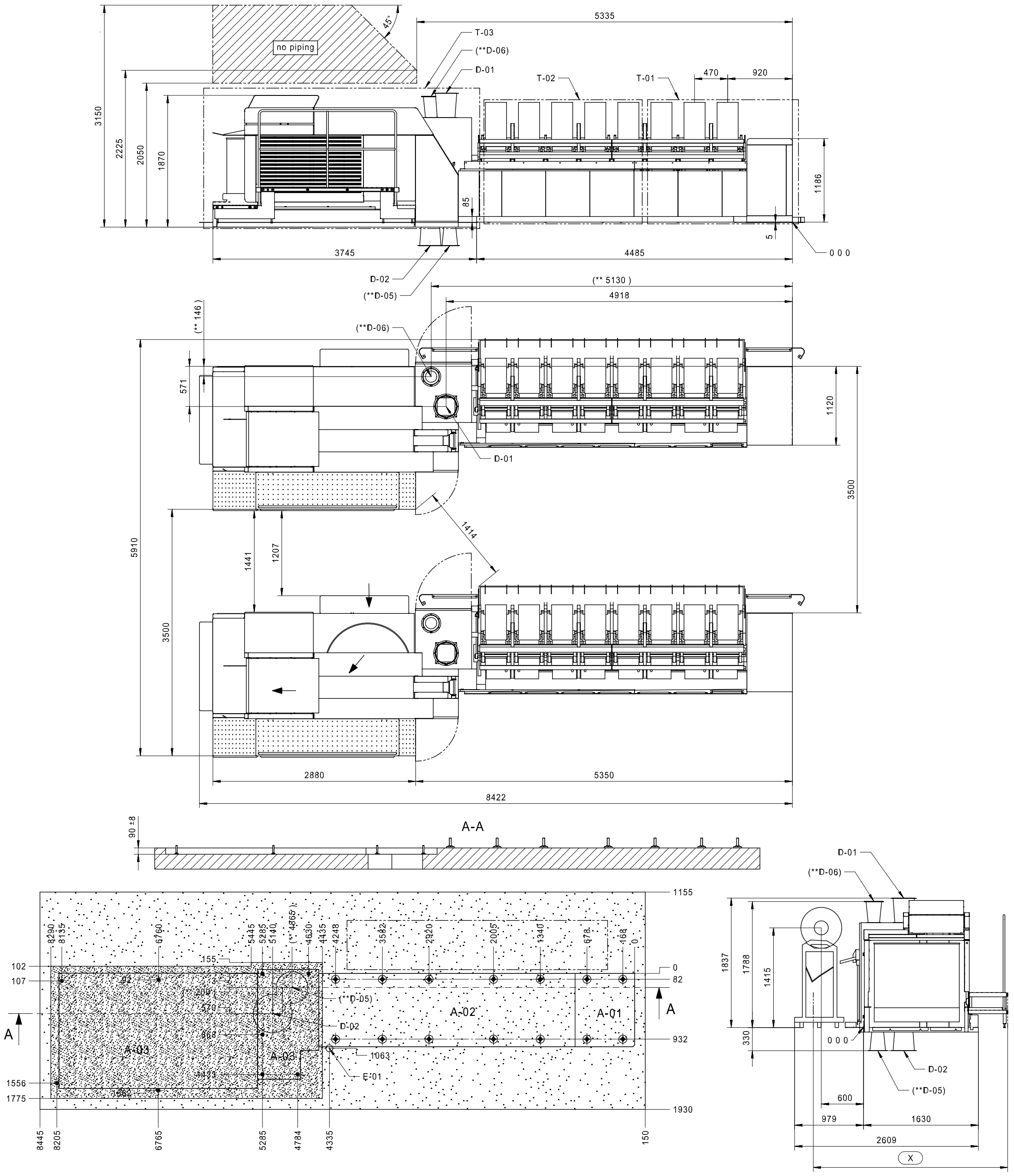

no piping
45°
5335
T-03
(**D-06)
D-01
T-02
T-01
470
920
3150
2225
2050
1870
85
1186
5
0 0 0
3745
4485
D-02
(**D-05)
(** 5130)
4918
(** 146)
(**D-06)
571
1120
D-01
3500
1414
5910
1441
1207
3500
2880
5350
8422
90 ±8
A-A
D-01
(**D-06)
1155
0
82
932
1930
A
A
A-02
A-01
A-03
A-03
(**D-05)
D-02
1063
E-01
102
107
1556
1775
8445
8205
6765
5285
4784
4335
150
1837
1788
1415
330
0 0 0
D-02
(**D-05)
600
979
1630
2609
X

Figure 55: CD 1200 mm, for SERVOtrolley from the 2 sides of the machine, recessed in the floor

**Only necessary with the ROBOlap option

3.5.3 Sound Emission

Revolutions of the Circular-Comb Shaft	Sound Power Level L_{WAd}	Sound Pressure Level L_{pAd}
450 rpm	104 + 3 dB	84.5 + 3 dB

Revolutions of the Circular-Comb Shaft	Sound Power Level L_{WAd}	Sound Pressure Level L_{pAd}
500 rpm	105.5 + 3 dB	86 + 3 dB
550 rpm	107.5 + 3 dB	88 + 3 dB
600 rpm	109 + 3 dB	89.5 + 3 dB

Table 1: Sound power level of the machine

The sound power level is as follows:

- With material, the batt weight is 78 g/m.

The standard for the sound emission is ISO 9902. The ISO 9902 measurement standards are as follows:

- Measurement distance: 1 m
- The formula of the sound emission: Lm + K
- Lm = Mean value
- K = 3 dB (Safety margin)

3.5.4 Compressed Air

Compressed-air pressure	7 bar
Compressed-air consumption for each machine	0.4 m3/h

3.5.5 Suction Value

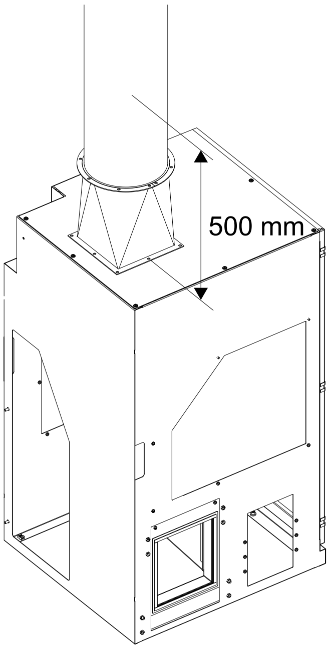


Figure 56: Suction duct

The suction duct has a diameter of 300 mm.

Suction Value for the Exhaust Air and Noils	
Static vacuum	300 Pa (1 m³/s)
Dynamic vacuum	123 Pa (1 m³/s)

Suction Value for the ROBOlap Suction Duct

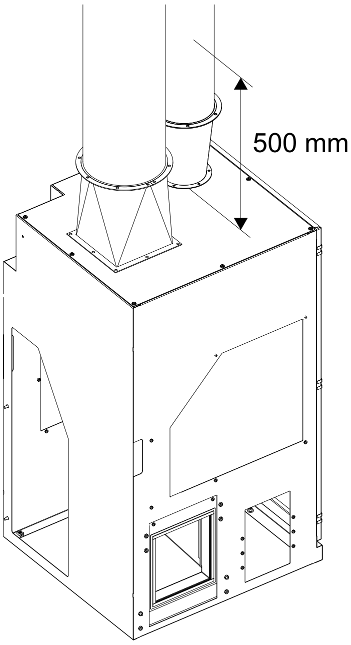


Figure 57: ROBOlap suction duct

The suction duct has a diameter of 220 mm.

Suction Value	
Static vacuum	1 200 Pa (0.5 m³/s)

Machine Numbers for Each Fan (with ROBOlap)

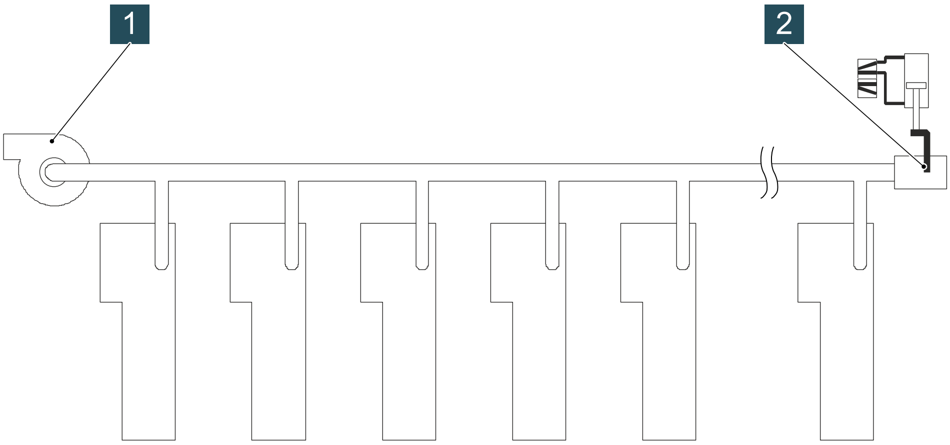


Figure 58: Fan for machine (with ROBOlap)

1 fan 1 supplies a sufficient suction rate for a maximum of 10 machines with ROBOlap.

If no suction is used at a comber, the air valve 2 opens.

The time interval is approximately 3 min for each 2 h while the time interval changes with the time between lap changes.

3.5.6 Machine Weight

Machine	Weight
Comber with the ROBOlap and a central suction system	4 760 kg
Comber without the ROBOlap and a central suction system	4 325 kg

Table 2: Total weight of the machine

3.5.7 Energy Consumption

Current Frequency 50 Hz	
Nips per minute: 550 rpm	4.8 kW

Table 3: Average energy consumption of the comber

3.5.8 Floor Load Plan

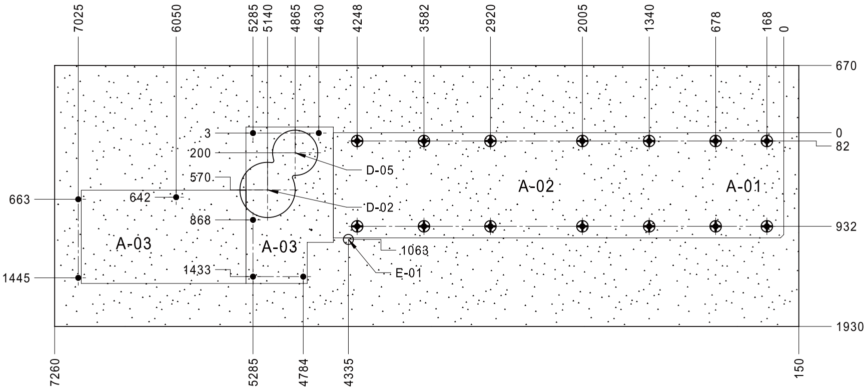

7025
6050
5285
5140
4865
4630
4248
3582
2920
2005
1340
678
168
0
670
0
82
932
1930
663
1445
3
200
570
642
868
1433
D-05
D-02
1063
E-01
A-02
A-01
A-03
A-03
7260
5285
4784
4335
150

Figure 59: Floor load plan for CD 600 mm, on the floor

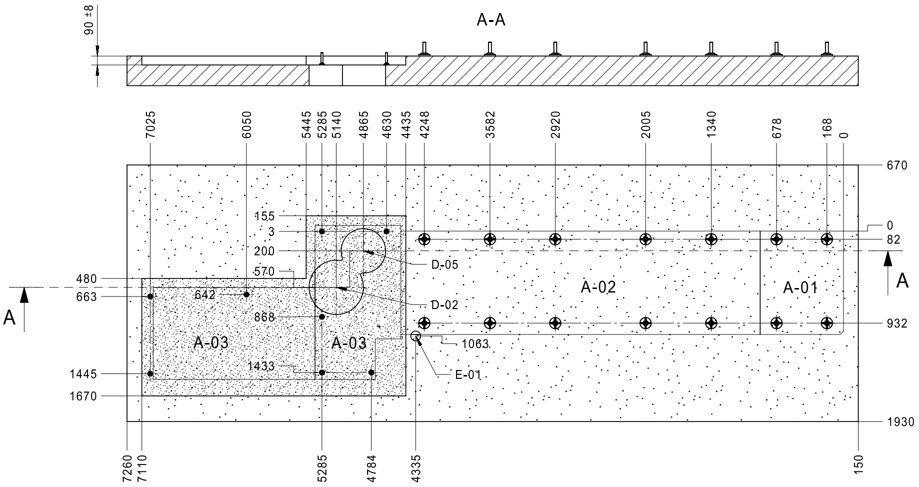

90 ±8
A-A
7025
6050
5445
5285
5140
4865
4630
4435
4248
3582
2920
2005
1340
678
168
0
670
0
82
932
1930
155
3
200
570
642
868
1433
480
663
1445
1670
A
A
D-05
D-02
1063
E-01
A-02
A-01
A-03
A-03
7260
7110
5285
4784
4335
150

Figure 60: Floor load plan for CD 600 mm, recessed in the floor

Type of Support	Quantity	Dimension	Floor Load / Support	Floor Load
A-01	4	Φ 115 mm	6205 N	12250 N/m^2
A-02	10	Φ 115 mm	4860 N	12250 N/m^2
A-03	8	Φ 50 mm	3500 N	12250 N/m^2

Table 4: Floor load for CD 600 mm

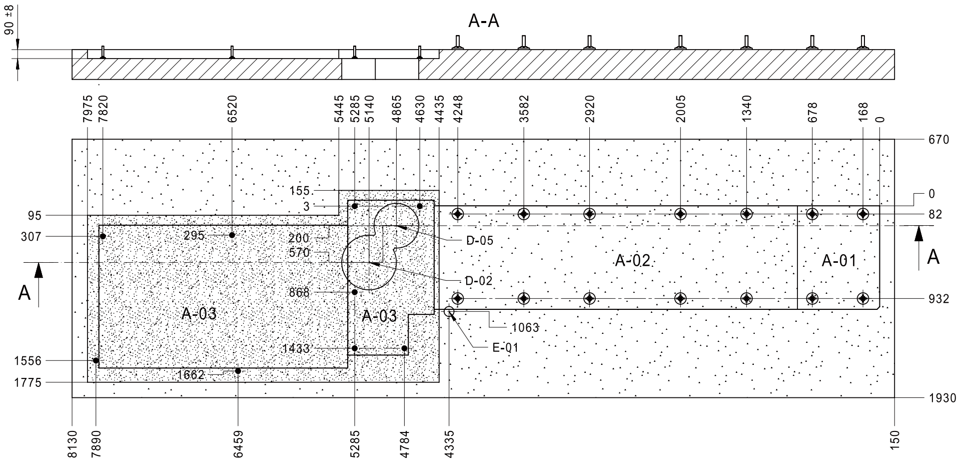

90 ±8
A-A
7975
7820
6520
5445
5285
5140
4865
4630
4435
4248
3582
2920
2005
1340
678
168
0
670
0
82
932
1930
95
307
1556
1775
155
3
295
200
570
868
1433
1662
1063
D-05
D-02
E-01
A-03
A-03
A-02
A-01
A
A
8130
7890
6459
5285
4784
4335
150

Figure 61: Floor load plan for CD 1000 mm, recessed in the floor

Type of Support	Quantity	Dimension	Floor Load / Support	Floor Load
A-01	4	Φ 115 mm	6205 N	10150 N/m^2
A-02	10	Φ 115 mm	4860 N	10150 N/m^2
A-03	9	Φ 50 mm	3750 N	10150 N/m^2

Table 5: Floor load for CD 1000 mm

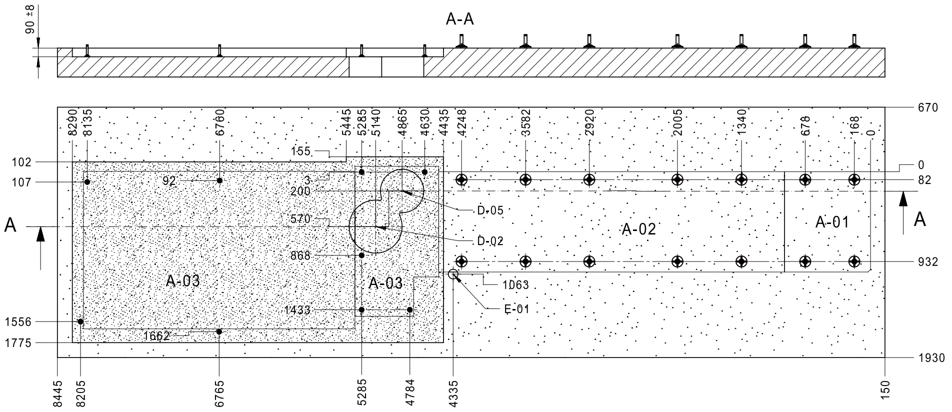

90 ±8
A-A
8290
8135
6760
5445
5285
5140
4865
4630
4435
4248
3582
2920
2005
1340
678
168
670
0
82
932
1930
102
107
1556
1775
155
92
3
200
570
868
1433
1662
1063
D-05
D-02
E-01
A-03
A-03
A-02
A-01
A
A
8445
8205
6765
5285
4784
4335
150

Figure 62: Floor load plan for CD 1200 mm, recessed in the floor

Type of Support	Quantity	Dimension	Floor Load / Support	Floor Load
A-01	4	Φ 115 mm	6205 N	13700 N/m^2
A-02	10	Φ 115 mm	4860 N	13700 N/m^2
A-03	9	Φ 50 mm	4060 N	13700 N/m^2

Table 6: Floor load for CD 1200 mm

3.5.9 Fiber Length of the Raw Material

The comber removes short fibers from the cotton.

Raw Materials Intended for Use	
Fiber type	Cotton only
Staple length	1 - 1$^1/_2$"
Maximum fiber length (if necessary)	1$^3/_4$’’

3.5.10 Batt

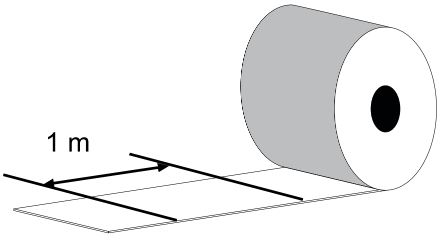


Figure 63: Batt

The batt weight is between 50 and 80 ktex.

Batt Quality (with ROBOlap)

Because the batt fringe is to be made narrower, a fringe-narrowing device that is installed in the OMEGAlap must prepare the lap.

3.5.11 Top Roller

Top Roller of the Drafting System

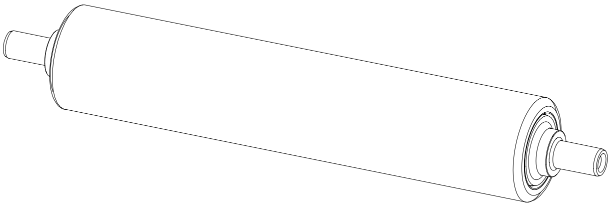


Figure 64: Top roller

Hardness	Color
75 Shore A	Black

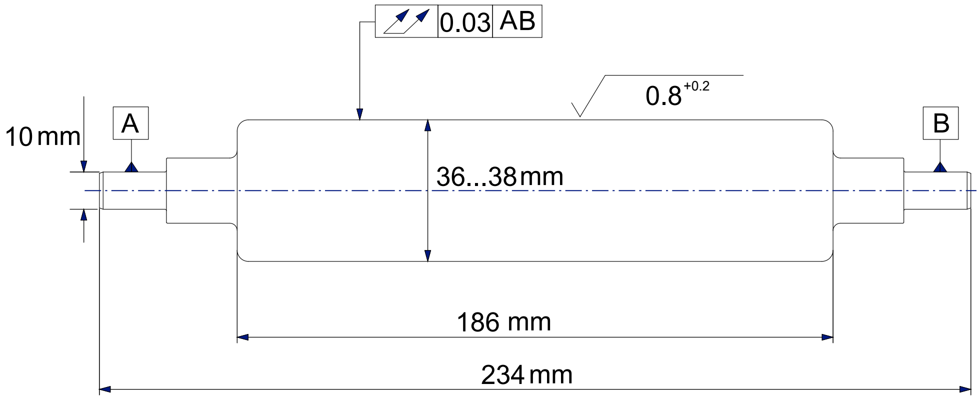


Figure 65: Dimensions of the top roller

Top Detaching Rollers

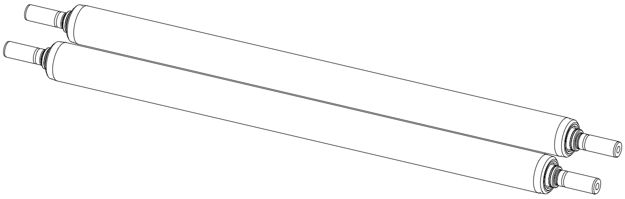


Figure 66: Top detaching roller

Hardness	**Color**	**Manufacturer**
65 Shore A	Brown	Bräcker B 65 S

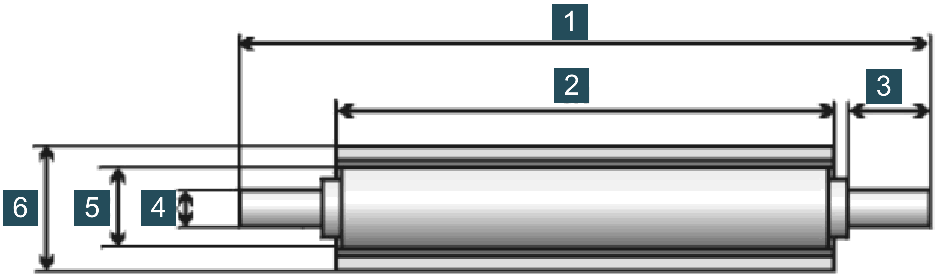


Figure 67: Dimensions of the top detaching roller

Number	**Name**	**Dimension**
1	Core length	412.6 mm
2	Cot length	348 mm
3	Pin length	27.5 mm
4	Pin diameter	10 mm
5	Core diameter	15.93 mm
6	Outer diameter	23.0 – 24.5 mm

Top Delivery Roller

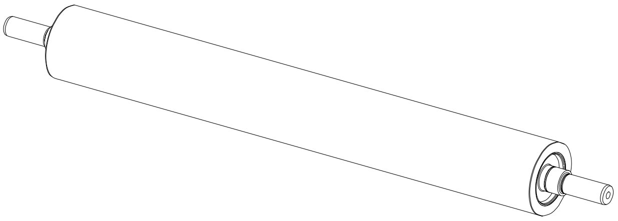


Figure 68: Top delivery roller

Hardness	Color	Manufacturer
83 Shore A	Gray	Accotex J - 490

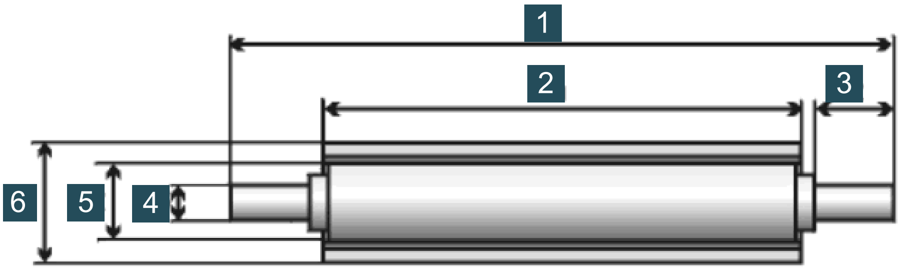


Figure 69: Dimensions of the top delivery roller

Number	Name	Dimension
1	Core length	417 mm
2	Cot length	336 mm
3	Pin length	30 mm
4	Pin diameter	12 mm
5	Core diameter	29.95 mm
6	Outer diameter	40.0 – 45.0 mm

Conveying Pressure Roller (with ROBOlap)

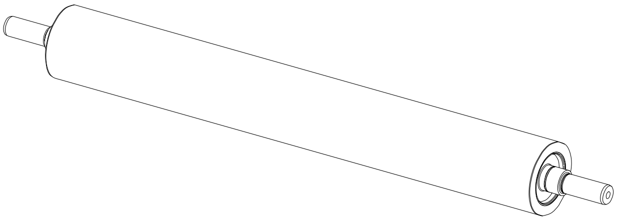


Figure 70: Conveying pressure roller

Hardness	Color	Manufacturer
83 Shore A	Gray	Accotex J - 490

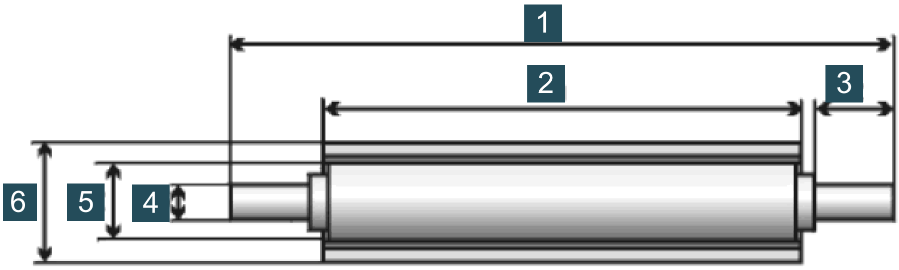


Figure 71: Dimensions of the conveying pressure roller

Number	Name	Dimension
1	Core length	417 mm
2	Cot length	336 mm
3	Pin length	30 mm
4	Pin diameter	12 mm
5	Core diameter	29.95 mm
6	Outer diameter	40.0 – 45.0 mm

3.5.12 Requirements for the Cans

The values given in the table are guide values and change with the material specifications. Test must be done to find the optimal can filling.

Sliver Cans					Can Filling [kg]	Spring Plate	
CD [mm]	CH [mm]	CD [inch]	CH [inch]	CH [mm]	Cotton	d4 [mm]	h4 [mm]
600	1 200	24	48	1 219	35	585	60
1 000	1 200	40	48	1 219	67	980	100
1 200	1 200	--	--	--	90	1 180	100

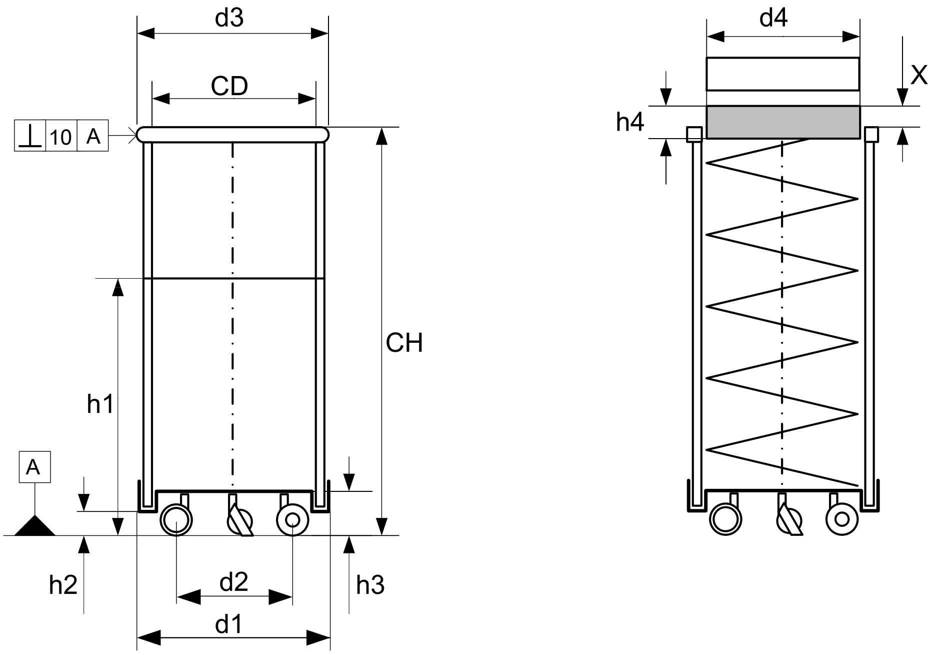


Figure 72: Dimensions of the cans with casters

CH	Can height (nominal dimension)	CD	Can diameter (nominal dimension)
d1	Outer can diameter with reinforcement	d2	Caster diameter
d3	Outer can diameter at top rim bead	d4	Spring plate width
h1	Height of can reinforcement	h2	Distance between the can and the floor
h3	Height that increases for casters	h4	Spring plate height
X	The distance of spring plate that goes out of the can		

Can Dimensions of the Cans with Casters

Parameter	Condition	Value
d3	--	CD + 30 mm maximum
CD	CD = 600 mm	CD ± 3 mm
	CD = 1 000 mm, 1 200mm	CD ± 6 mm
CH	--	CH ± 5 mm
d1	--	CD + 15 mm, tolerance: 0 – 5 mm
h2	CD = 600 mm	60 mm
	CD = 1 000 mm	80 mm
	CD = 1 200 mm	100 – 105 mm
h3	CD = 600 mm	85 mm

Can Dimensions of the Cans with Casters		
Parameter	**Condition**	**Value**
d2	CD = 1 000 mm, 1 200mm	110 mm
	CD = 600 mm	CD - 120 mm
	CD = 1 000 mm, 1 200mm	CD - 160 mm
X	--	35 ± 5 mm
h1	--	550 mm

Requirements of the Cans

CAUTION

Using damaged cans!

Risk of crushing of the personnel

▶ Only use cans that are NOT damaged in the delivery unit.

- The spring plates of the cans must have a structured surface.
- Only use the cans that are made stronger in the area h1 if the cans are made from the vulcanized fiber. Only use the cans with the handles installed above the area h1 on the can.

3.6 Technical Diagrams and Formulas

This section contains the information about the technical diagrams and formulas.

3.6.1 Nipping Rate

The nipping rate is to be adapted to the staple length. The nipping rate is an important parameter in prioritizing between quality and quantity.

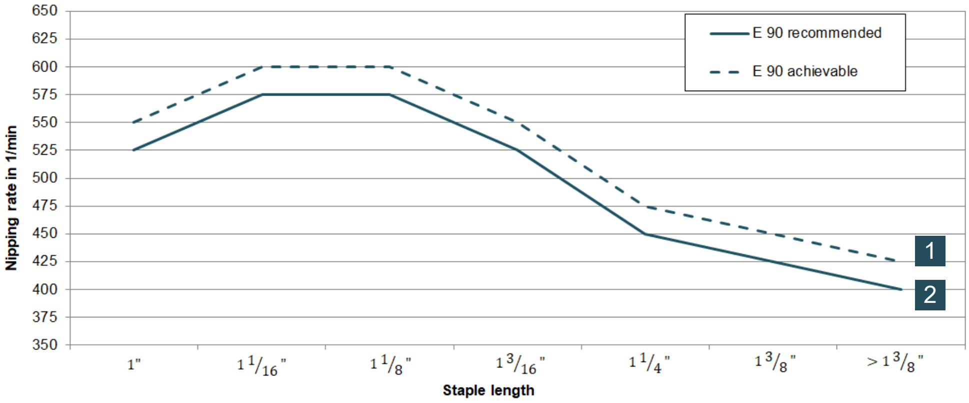


Figure 73: Nipping rate

1	Quantity more important	2	Balance between quality and quantity

3.6.2 Feed Amount

The feed amount is to be set in accordance with the staple length. The feed amount is an important parameter in prioritizing between quality and quantity.

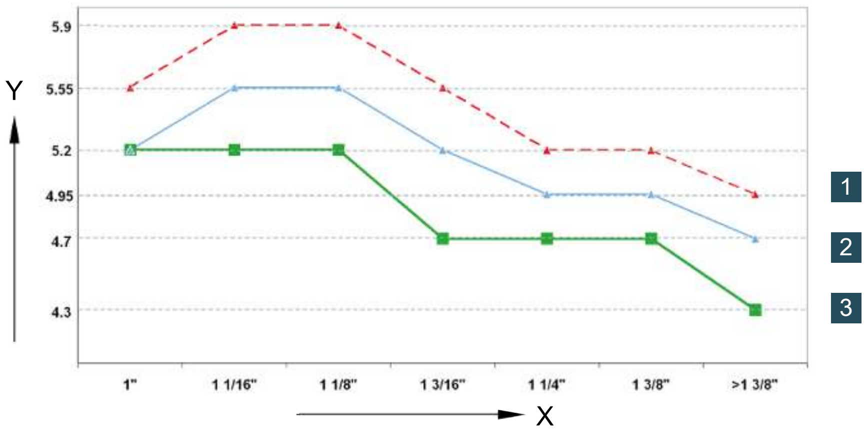


Figure 74: Diagram of the feed amount

X	Staple length in inches	Y	Feed amount in mm
1	Priority for quantity	2	Balance between quality and quantity
3	Priority for quality		

Feed Amount for Cotton < 1 ¼”

Only forward feed is possible.

Feed Amount	Diameter of the Ratchet Wheel
4.7 mm	20
4.95 mm	19
5.2 mm	18
5.55 mm	17
5.9 mm	16

Table 7: Feed amount for ratchet wheels with a large diameter

Feed Amount for Cotton ≥ 1 ¼”

Forward feed and backward feed are possible.

Feed Amount	Small Diameter Ratchet Wheel
4.3 mm	22

Feed Amount	Small Diameter Ratchet Wheel
4.7 mm	20
4.95 mm	19
5.2 mm	18

Table 8: Feed amount for ratchet wheels with a small diameter

Important Facts about the Feed Amount

The important facts about the feed amount are as follows:

- If the ratchet wheels with a large diameter and a small diameter are available, the correct diameter is to be selected in accordance with the raw material that is used.
- Do not use ratchet wheels with a large diameter and a small diameter on the machine at the same time.
- The ratchet wheels with a large diameter are only used for short-staple cotton and middle-staple cotton < 1 ¼”.

3.6.3 Feed Type

In general, the feed type of the machine is set to the forward feed.

Only when the noil percentage is below standard, the feed type is to be set to the backward feed.

Type	Feeding Pawl
Forward feed	Long pawls
Backward feed	Short pawls The short pawls are only used for long-staple cotton ≥1 ¼’’.

Table 9: Feed type

3.6.4 Ratchet Wheel

The ratchet wheel operates the feed cylinder. The ratchet wheels are change parts.

All ratchet wheels on the machine must be of the same type, with the same number of teeth, and the same diameter.

Small Feed Amount

The more teeth the ratchet wheel 2 has, the smaller the feed amount 1 is.

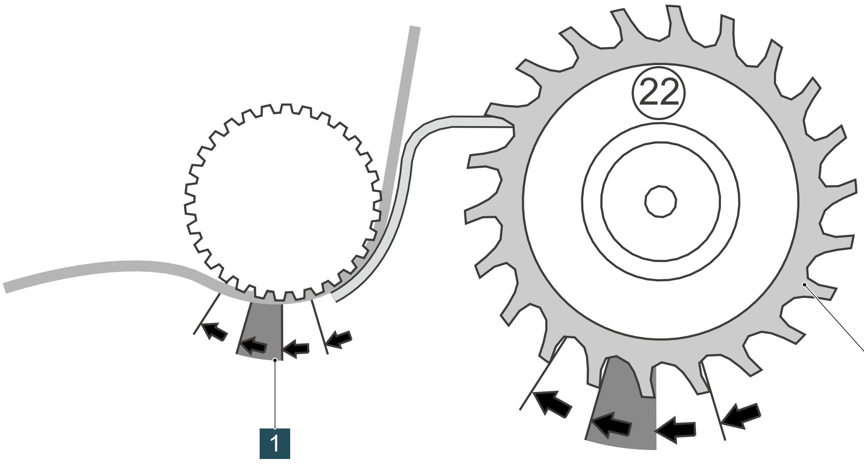


Figure 75: Small feed amount

If the feed type is forward feed, the noil percentage is higher.

If the feed type is backward feed, the noil percentage is lower.

Large Feed Amount

The fewer teeth the ratchet wheel 4 has, the larger the feed amount 3 is.

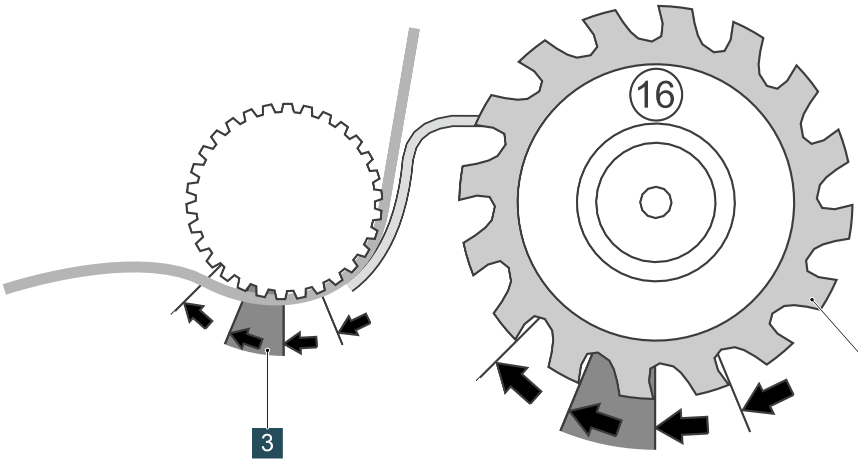


Figure 76: Large feed amount

If the feed type is forward feed, the noil percentage is lower.

If the feed type is backward feed, the noil percentage is higher.

3.6.5 Batt Tension

A different motor operates the lap rollers 1. The main motor operates the take-off rollers 2 with ROBOlap (*refer to* ▸ *285*).

Batt Tension without ROBOlap

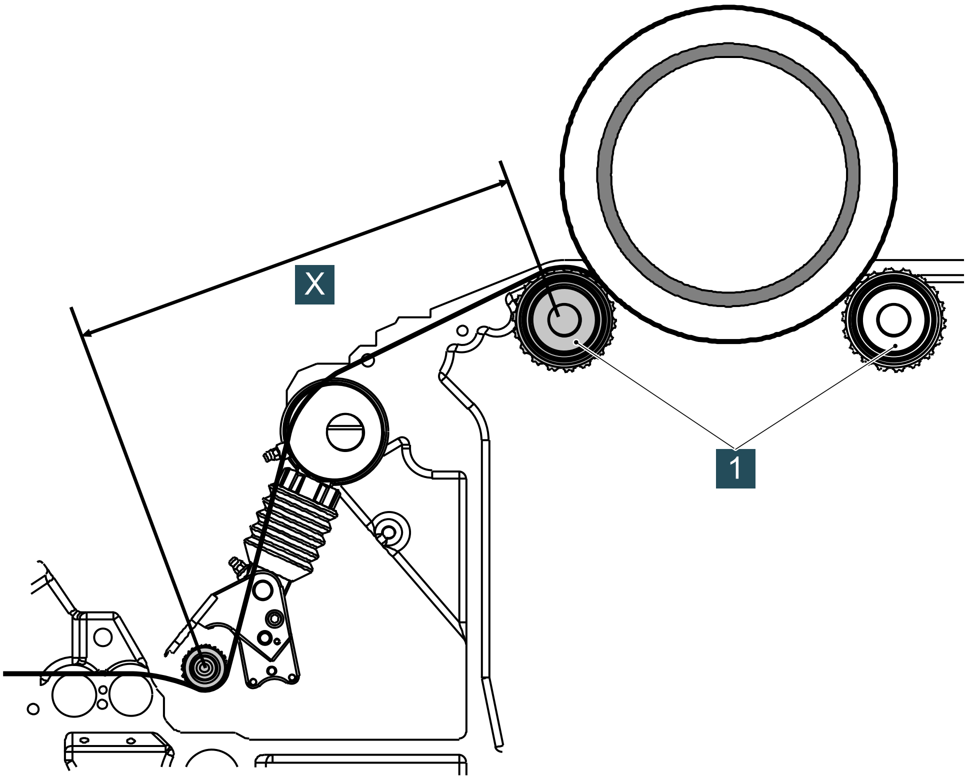


Figure 77: Batt tension without ROBOlap

The batt tension **X** is the tension between the lap roller and the feed cylinder. The batt tension **X** is set on the data screen 1.4.2 **Tension**.

Batt Tension with ROBOlap

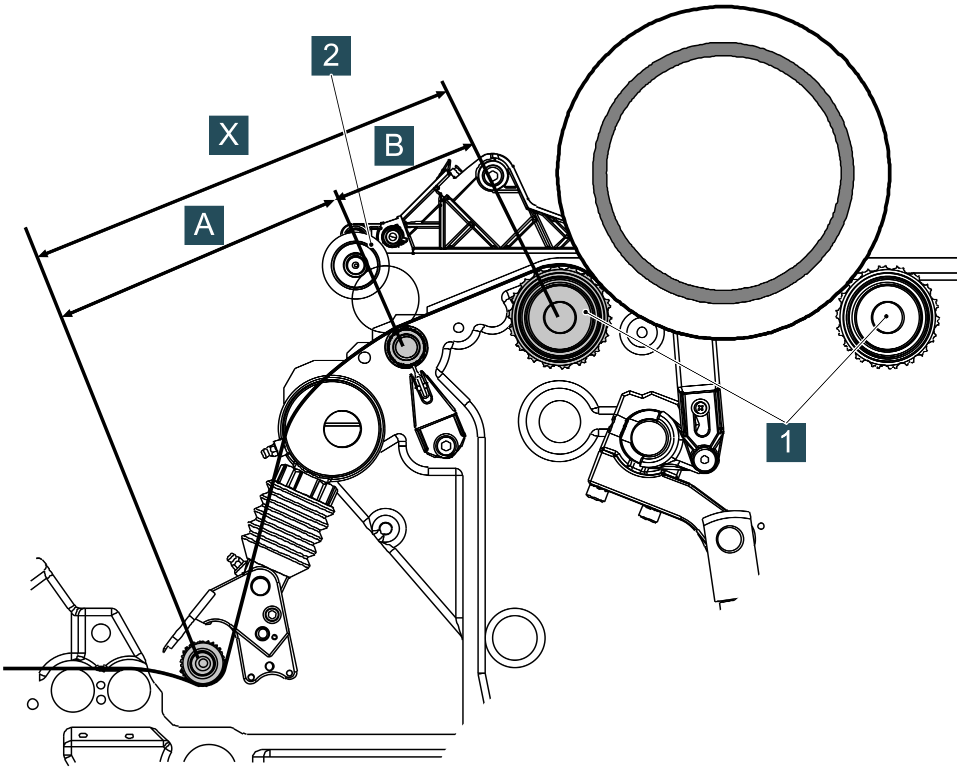


Figure 78: Batt tension with ROBOlap

The batt tension X is the tension between the lap roller and the feed cylinder. The batt tension X is set on the data screen 1.4.2 **Tension**.

The batt tension A is the tension between the carrier roller and the feed cylinder. The batt tension A is set with the change pulley that operates the carrier roller.

The batt tension B is the tension between the lap roller and the carrier roller. The tension X is to be equally supplied to the batt tensions A and B. If the batt tension X is 12 %, the batt tension A and the batt tension B are to be 6 %.

Change Pulley (Number of Teeth)	**Belt Length (mm)**	**Batt Tension A**					
		Ratchet Wheel (Number of Teeth)					
--	--	16	17	18	19	20	22
62	710	4.3 %	--	--	--	--	--
58	710	--	4.9 %	--	--	--	--
55	710	--	--	4.5 %	--	--	--
54	710	--	--	6.4 %	--	--	--
52	690	--	--	--	4.7 %	--	--

Change Pulley (Number of Teeth)	Belt Length (mm)	Batt Tension **A**					
		Ratchet Wheel (Number of Teeth)					
50	690	--	--	--	8.9 %	3.4 %	--
45	670	--	--	--	--	--	4.5 %

Table 10: Batt tension A

Table Tension

The table tension is the batt tension between the table calenders 1 and the bottom deflection rollers 2 of sliver ramp.

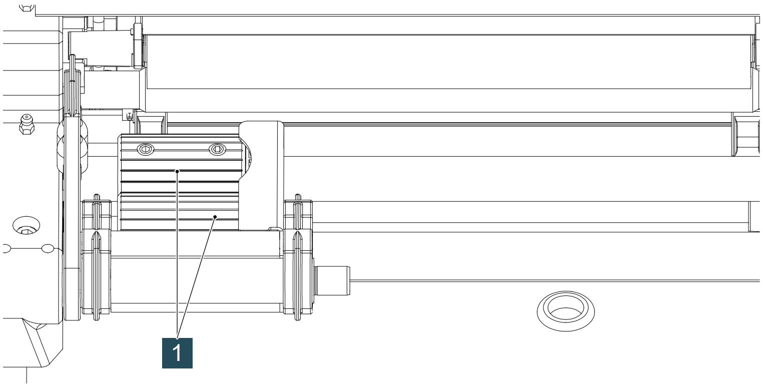


Figure 79: Table calenders

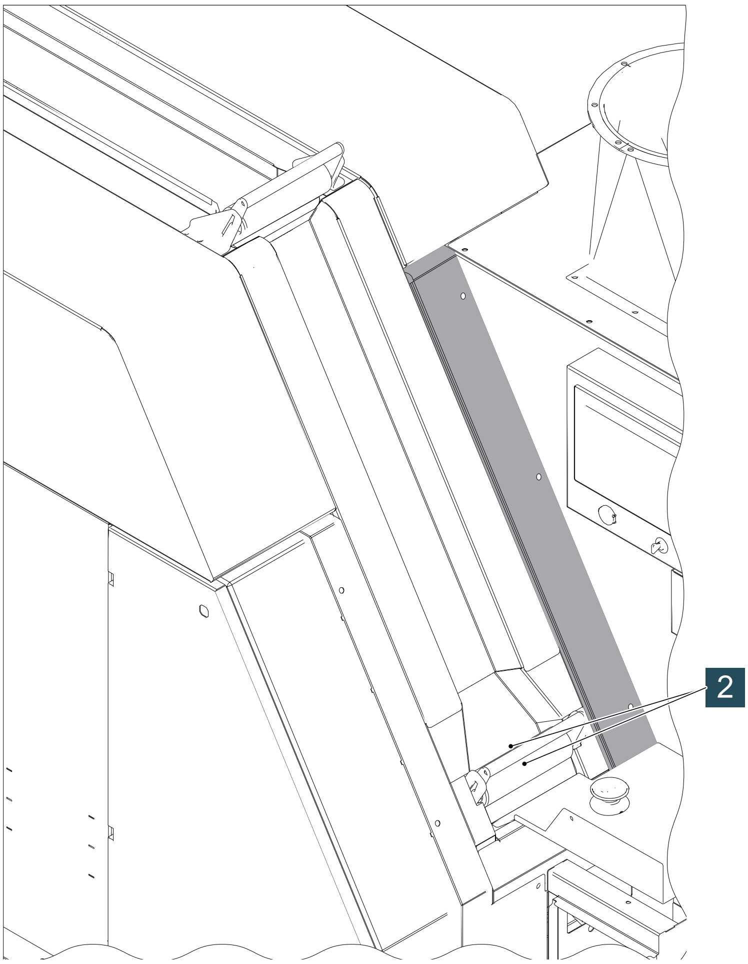


Figure 80: Bottom deflection rollers

The table tension is set on the data screen 1.3.2 **Sliver feed** (*refer to* ▸ *150*).

3.6.6 Drafting System

The tension and the draft in the drafting system are possible to be set with the change pulleys. The gearing layout is to be referred to for more information (*refer to* ▸ *285*).

3.7 Identification Plate

The identification plate is adjacent to the push button unit of the empty can area.

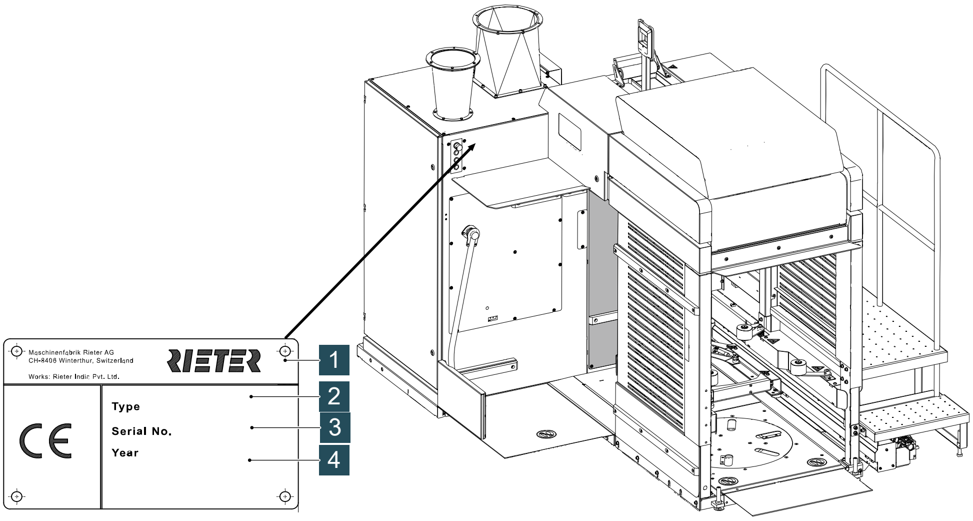

Maschinenfabrik Rieter AG
CH-8406 Winterthur, Switzerland
Works: Rieter India Pvt. Ltd.
RIETER
CE
Type
Serial No.
Year
1
2
3
4

Figure 81: Identification plate at the delivery unit (CD 600 mm)

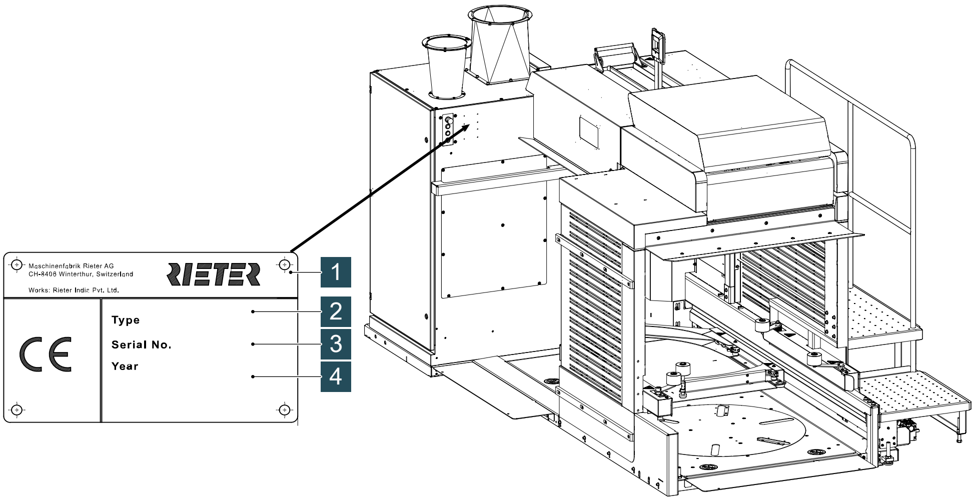

Maschinenfabrik Rieter AG
CH-8406 Winterthur, Switzerland
Works: Rieter India Pvt. Ltd.
RIETER
CE
Type
Serial No.
Year
1
2
3
4

Figure 82: Identification plate at the delivery unit (CD 1000 / 1200 mm)

1	Identification plate	2	Machine type
3	Serial number	4	Year of manufacture

Identification Plate of the Control Cabinet

The identification plate of the control cabinet is at the inner side of the control cabinet door.

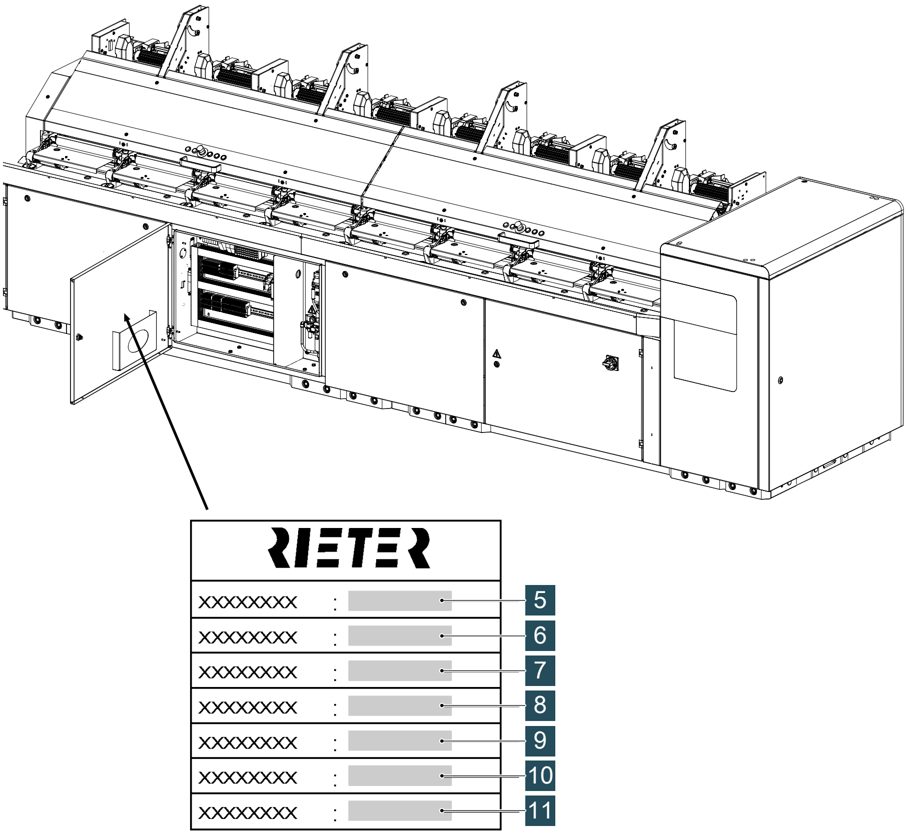

RIETER
XXXXXXXX :
XXXXXXXX :
XXXXXXXX :
XXXXXXXX :
XXXXXXXX :
XXXXXXXX :
XXXXXXXX :
5
6
7
8
9
10
11

Figure 83: Identification plate of the control cabinet

5	Machine type	6	Order number and year of manufacture
7	Supply voltage	8	Ampere of the pre-fuse
9	Control voltage	10	Diagram number
11	Diagram number		

Identification Plate of the Wiring Diagram

The identification plate is at the inner side of the control cabinet door. The identification number of the control cabinet and the identification number of the wiring diagram must be the same.

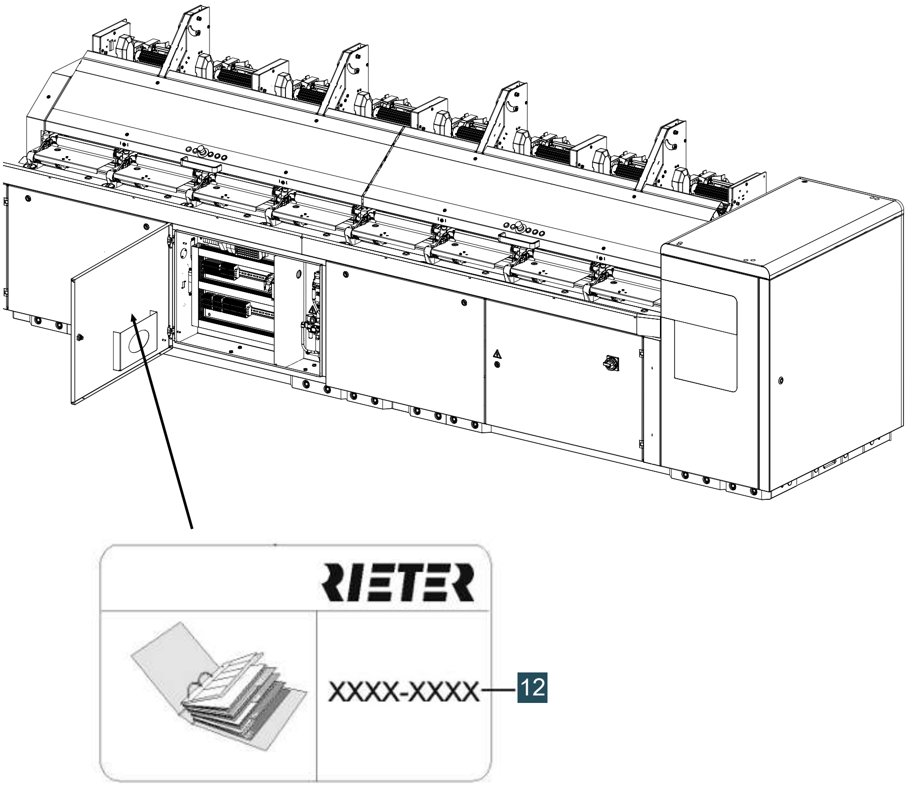


Figure 84: Identification plate of the wiring diagram

12	Material number of the wiring diagram

3.8 Doors and Hoods

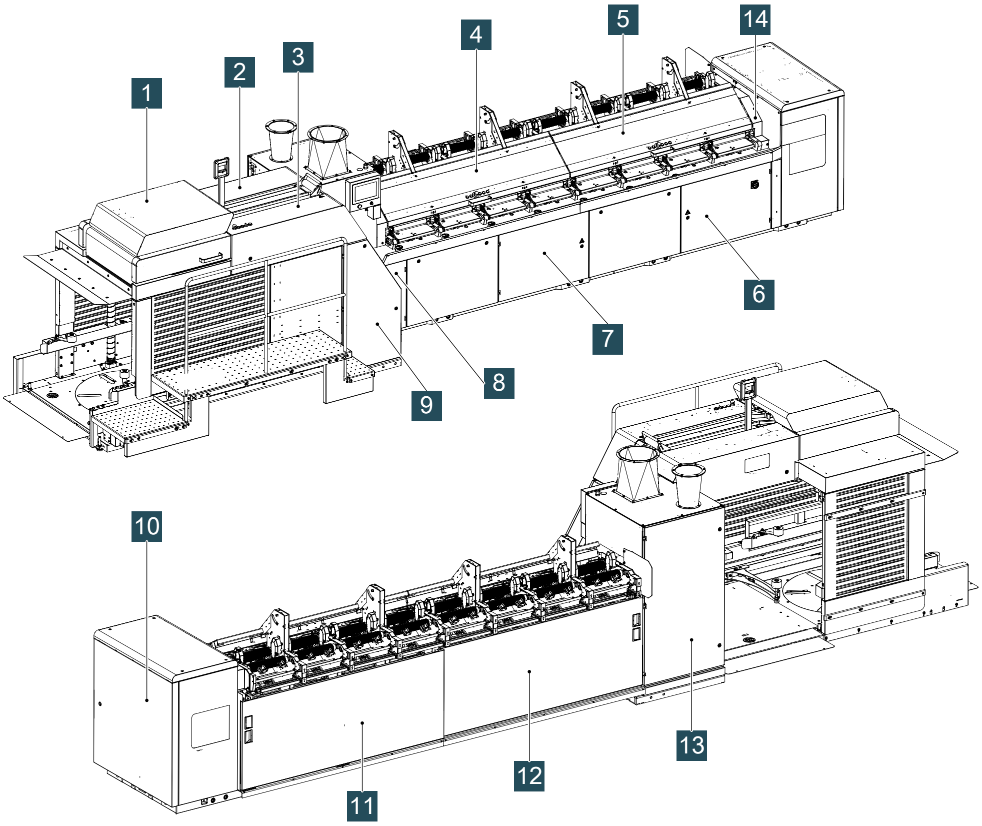


Figure 85: Doors and hoods

1	Drafting system hood	2	Cover of the break draft belt
3	Cover of the main draft belt	4	Section 2 hood
5	Section 1 hood	6	Control cabinet 1
7	Control cabinet 2	8	Cable box door
9	Control cabinet 3	10	Head stock door
11	Sliding door of section 1	12	Sliding door of section 2
13	Suction box door	14	Cover

Doors and Hoods with Locks

The machine has doors and hoods with locks. The twist locks prevent that the doors and the hoods become opened accidentally. The operator opens and closes the doors and the hoods with the triangular key 15.

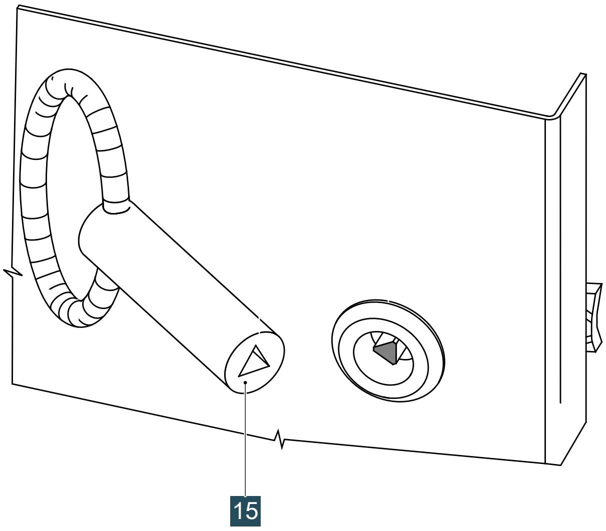


Figure 86: Triangular key

The doors and the hoods with locks are as follows:

- Cover of break draft belt 2
- Cover of main draft belt 3
- Head stock door 10
- Control cabinet 1 6
- Control cabinet 2 7
- Control cabinet 3 9
- Cable box door 8

Doors and Hoods without Locks

The machine also has doors and hoods without locks. No key is necessary to open and to close the doors and hoods without locks.

The doors and the hoods without locks are as follows:

- Drafting system hood 1
- Sliding door of section 1 11
- Sliding door of section 2 12
- Section 1 hood 5
- Section 2 hood 4

Hoods and Covers with Lock Washers

To prevent that the screws 19 become missing when the covers 14 are removed from the machine, the lock washers are used on the covers and the hood.

The screws 15 are attached to the hood and to the covers with the lock washers 16:

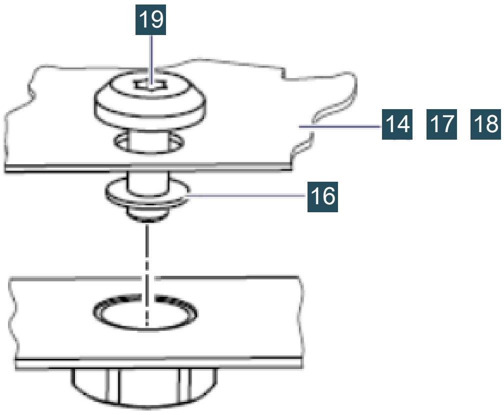


Figure 87: Lock washer

The hood and the covers with the lock washers are as follows:

- Cover 14
- Cover 17 of the delivery roller belt

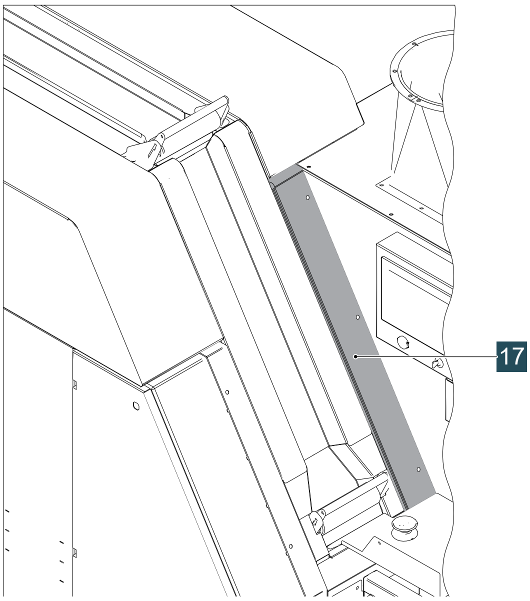


Figure 88: Cover of the deflection roller belt

- Suction box cover 18

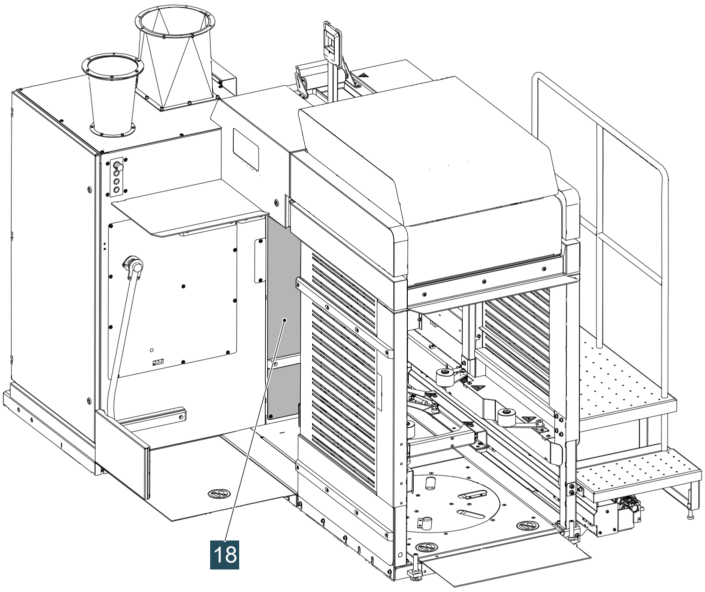


Figure 89: Suction box cover (CD 600 mm)

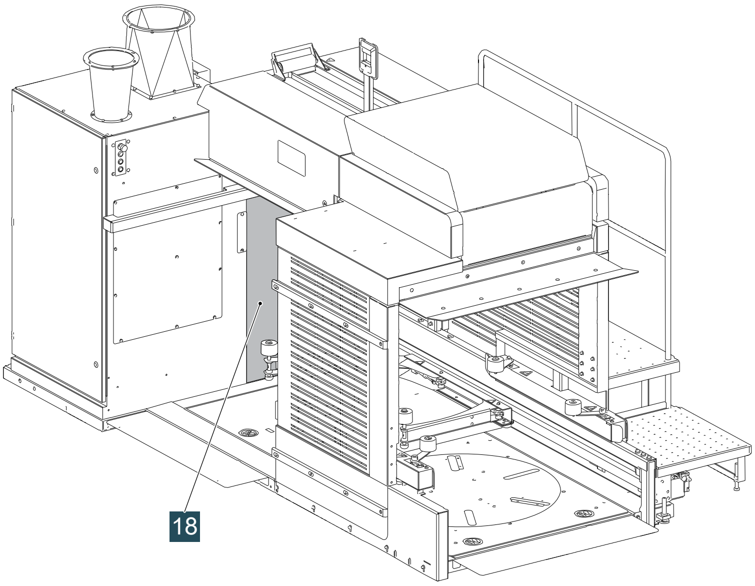


Figure 90: Suction box cover (CD 1000 / 1200 mm)

3.9 Definitions

This chapter contains the information about the definitions for the machine.

3.9.1 Index Disk

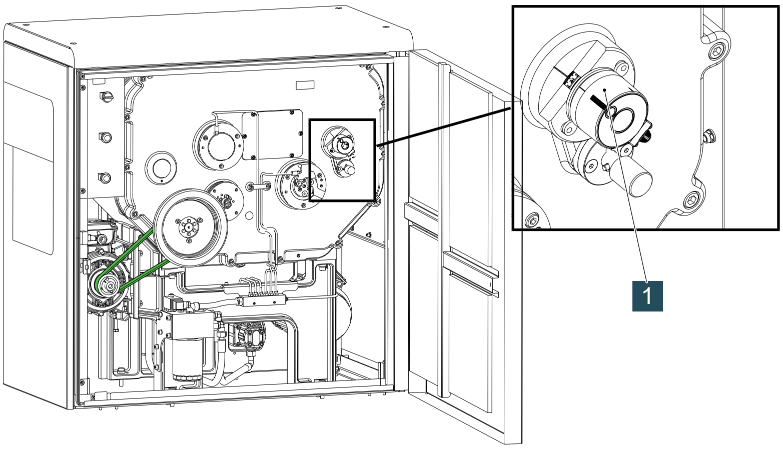


Figure 91: Index disk

A scale 1 with 40 graduation marks is attached to the cam shaft nipper. This scale is referred to as an index. The index sets the machine to a specified instance in the combing cycle. For example, index 24 is the front reversal point of the nipper. For the most setting tasks, the machine is to be set to a specified index before something of the machine is possible to be set.

3.9.2 Nipping Surface Distance

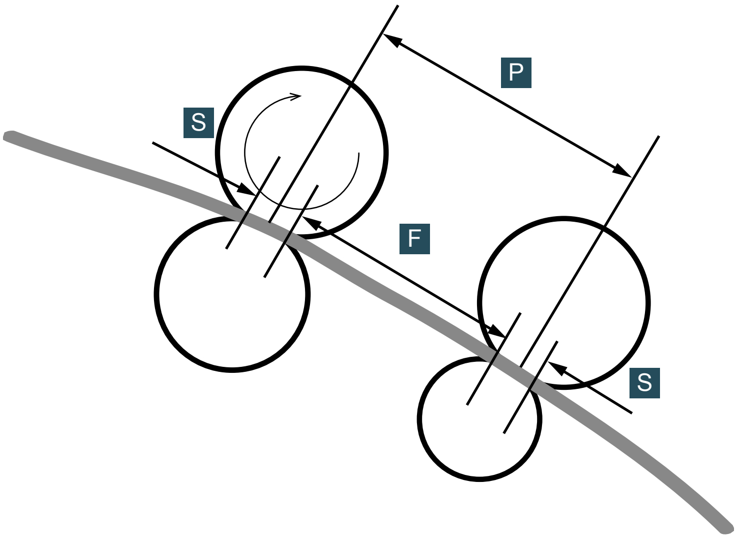


Figure 92: Nipping surface distance

The nipping surface S occurs when the pressure pushes the rollers with the roller cots flat in the drafting system. The rollers with the roller cots hold the fibers at the nipping surface.

The factors that follow give the dimension of the nipping surface S:

- Drafting system load

- Rubber hardness
- Roller diameter
- Fiber mass

The nipping surface S has no accurate limit. The nearer the related fiber end is to the theoretical nipping point, the larger the friction forces that have an effect on the fibers.

The nipping surface distance F is the distance between the nipping surfaces S. This distance is an important factor when the drafting system distances are to be set.

The nipping surface distance F must not be smaller than the length of the longest fiber.

The nipping line distance P, also referred to as the nipping point distance, is lightly larger than the nipping surface distance F.

3.9.3 Detaching Distance

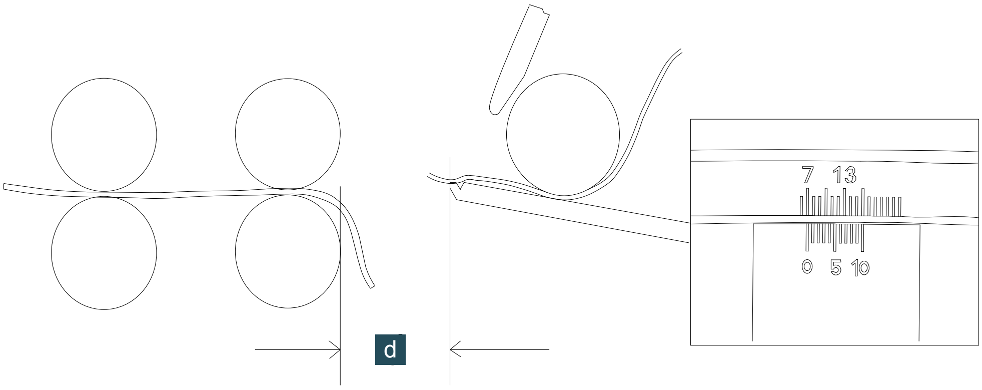


Figure 93: Detaching distance

When the machine is set to the Index 24, the distance d is given as the machine detaching distance. The detaching distance d is the distance between the bottom detaching cylinder and the bottom nipper plate.

The detaching distance d is an important factor for noil extraction.

NOTICE

Collision of machine parts!

Machine damage by collision of top combs and detaching top rollers

▶ When the detaching distance is changed, set the position of top combs.

If the detaching distance is changed by more than 3 mm, the distance between the circular comb and the nipper must be checked (*refer to ▸ 379*).

3.9.4 Comber Noil Percentage

$$P = \frac{n}{n + s} \cdot 100 = [\%]$$

Figure 94: Formula for the noil percentage

n [g]	Noils, weight of the collected noils
s [g]	Sliver, weight of the made sliver
P [%]	Comber noil percentage, percentage of noils in the total quantity of raw material supplied to the comber piecing procedure

3.9.5 Wavelength of the Piecing Period

$$F \times GV = L$$

Figure 95: Formula for the wavelength of the piecing period

F	Factor for the average piecing distance 3.06
GV	Total draft in the drafting system
L [mm]	Wavelength of the piecing period The mass deviation is shown in the spectrogram at this length.

3.9.6 Production Calculation

$$P = \frac{(1 - n) \times s \times r \times k \times g \times 60}{1000 \times 1000 \times A} \times w = [kg/h]$$

Figure 96: Formula for the production calculation

r [nips/min]	Nipping rate
s [mm]	Feed amount for each cycle
n [%]	Noil percentage
k [units]	Number of combing positions With 1 machine, the value 8 is to be used in the formula.
g [g/m]	Batt weight

A [%]	Tension Batt tension between the lap rollers and the feed rollers Example: With 9 % noil, the value 1,09 is to be used in the formula.
w [%]	Efficiency rate

3.9.7 Total Draft

$$V = HV \times VV$$

Figure 97: Formula for the total draft

V	Total draft
HV	Main draft
VV	Break draft

3.9.8 Formula for the Machine Efficiency

$$MN = \frac{A + B}{A + B + D}$$

Figure 98: Formula for the machine efficiency

MN	Machine efficiency
A	Production time in the production mode
B	Non-production time in the production mode
D	Fault time

3.9.9 Formula for the Production Efficiency

$$PN = \frac{A}{T}$$

Figure 99: Formula for the production efficiency

PN	Production efficiency
A	Production time in the production mode
T	Total time

This formula applies to machines with the constant rates of delivery.

The production efficiency shows the ratio of the current production of a machine to the theoretically possible production (summation of the target productions) of a machine. The procedure has an effect on the production efficiency. All influences are taken into account.

Production time in the production mode: The production time in the production mode is the total time for material production in the production mode. When a machine is started in the automatic mode, the machine starts the production mode. When the machine stops (stop button, fault), the machine stops the production mode.

Total time: The time when the main switch is on plus the time when the main switch is off (downtime).

3.9.10 Formula for MTBA

$$MTBA = \frac{A + B}{S}$$

Figure 100: Formula for MTBA

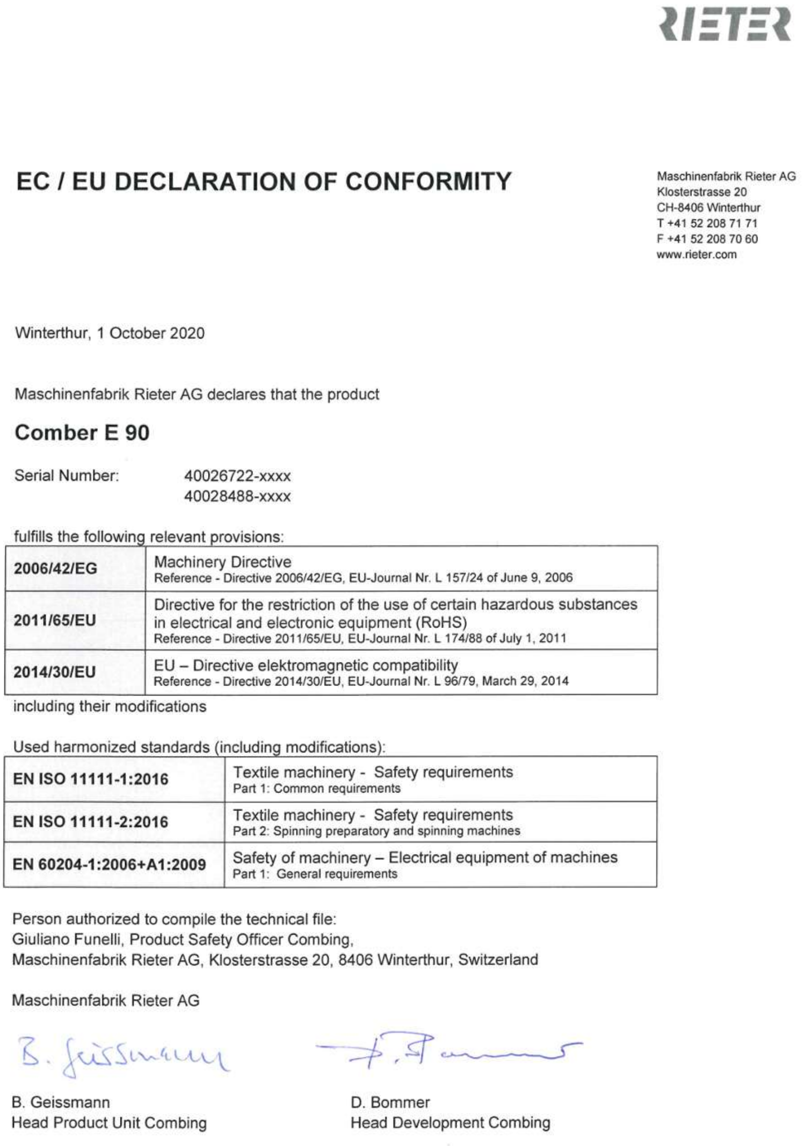
A	Production time in production mode
B	Non-production time in production mode
S	Number of stops because of internal faults

Mean Time between Assist: The time between assistance that shows the average run time before an intervention by the operator is necessary because of an internal fault. The MTBA show the running behavior of a machine or of a full system in numbers. The higher the MTBA value, the larger the average production time between interventions by the operator.

Production time in production mode: The production time in production mode is the total time for material production in the production mode. When a machine is started in automatic mode, the machine starts the production mode. When the machine stops (stop button, fault), the machine stops the production mode.

Non-production time in production mode: The time when the machine waits, for example during the can change or the lap change.

3.10 EC/EU Declaration of Conformity



Maschinenfabrik Rieter AG
Klosterstrasse 20
CH-8406 Winterthur
T +41 52 208 71 71
F +41 52 208 70 60
www.rieter.com

EC / EU DECLARATION OF CONFORMITY

Winterthur, 1 October 2020

Maschinenfabrik Rieter AG declares that the product

Comber E 90

Serial Number: 40026722-xxxx
40028488-xxxx

fulfills the following relevant provisions:

2006/42/EG	Machinery Directive Reference - Directive 2006/42/EG, EU-Journal Nr. L 157/24 of June 9, 2006
2011/65/EU	Directive for the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) Reference - Directive 2011/65/EU, EU-Journal Nr. L 174/88 of July 1, 2011
2014/30/EU	EU – Directive elektromagnetic compatibility Reference - Directive 2014/30/EU, EU-Journal Nr. L 96/79, March 29, 2014

including their modifications

Used harmonized standards (including modifications):

EN ISO 11111-1:2016	Textile machinery - Safety requirements Part 1: Common requirements
EN ISO 11111-2:2016	Textile machinery - Safety requirements Part 2: Spinning preparatory and spinning machines
EN 60204-1:2006+A1:2009	Safety of machinery – Electrical equipment of machines Part 1: General requirements

Person authorized to compile the technical file:
Giuliano Funelli, Product Safety Officer Combing,
Maschinenfabrik Rieter AG, Klosterstrasse 20, 8406 Winterthur, Switzerland

Maschinenfabrik Rieter AG

B. Geissmann

B. Geissmann
Head Product Unit Combing

D. Bommer
Head Development Combing

Figure 101: EC certificate

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4 Packaging and Transportation

This chapter contains information about:

- The general packaging instructions
- The packaging
- The packaging accessories
- The instructions on safe machine transport

4.1 Packaging and Transportation Personnel

Only Rieter-approved personnel are permitted to:

- Remove the packaging material or put the machine in the packing material
- Remove the machine from the material boxes or the transportation pallets
- Install the machine in the material boxes or on the transportation pallets

4.2 Liability for Unloading and Transportation

The customer is liable for the transportation to the installation site and the temporary storage. The customer is liable to remove the machine components from the trucks at the installation site.

The installation personnel do not move machine components to the installation site or remove components from the trucks at the installation site. In the case that instructions from the installation personnel are necessary, the installation personnel is not responsible for damage that occurs.

4.3 Removing the Packaging Material

1. Do not keep the material boxes in a cold room before the packaging material is removed. Keep the machine and the components in the packaging material in the installation location for minimum 24 hours.
2. Open the material boxes.
3. Remove the packaging material and the drying agents.
4. Examine if the machine or parts of the machine got damage during the transport.
5. If machine damage occurred, the personnel must tell the customer to give a report to the insurance office.
6. To examine the contents of the material boxes for missing parts, use the packing list.
7. If the material boxes do not contain all parts, the personnel must tell the customer to give a report to Rieter.
8. Remove the transport locks from the material boxes and the transportation pallets.

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5 Installation

This chapter contains information about:

- The necessary installation conditions
- The necessary installation personnel

5.1 Floor Condition

Floor Structure

If the floor structure is not stable and not flat, the machine is possible to be damaged.

Only approved personnel can make a plan of the floor structure. The floor load of each machine foot is to be obeyed. Soft materials such as slag, sand, and asphalt are not to be used as an intermediate layer 2. If soft materials are used as the intermediate layer, the vibration that the machine causes moves the intermediate layers 2.

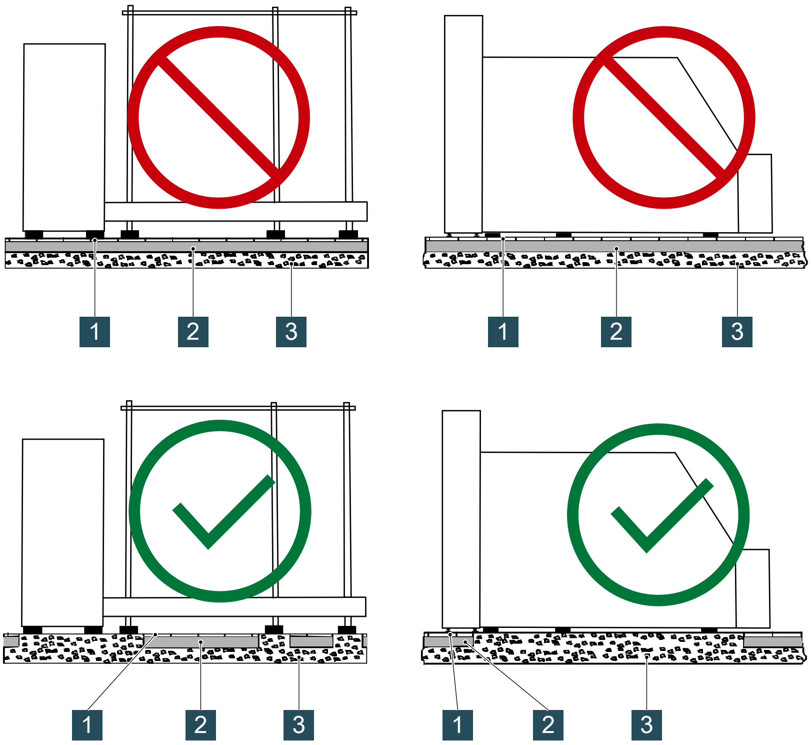

Figure 102: Floor condition

1	Flooring	2	Intermediate layer
3	Concrete substrate		

Flooring 1 such as clinker, concrete slabs, or hard surfaces are not to be installed on the intermediate layers 2 that are made of slag, sand, and asphalt. To have a horizontal surface, a minimum of the area of the machine foot is to be filled with concrete substrate 3.

Rieter accepts no liability for machine damage that is caused because the incorrect floor structure was used.

Floor Properties

The floors must have the properties that follow:

- Not aggressive to metals
- High abrasion resistance
- High compressive strength
- Slip-resistant
- Hard and tough, non-ceramic
- No expansion joint in the machine foundation
- Resistant to
    - Oils
    - Fuel
    - Acids
    - Alkalis

Level and Evenness of the Floor

For each running meter	±4 mm
For each 4 m	±10 mm

5.2 Installation Requirements for the Customer

The customer:

- Must give instructions about the danger zones of the installation site
- Must tell the installation personnel about the site-specific safety regulations
- Must make sure of the site-specific safety
- Must install the necessary rails
- Must make sure that the training for the installation personnel is done before the installation
- Must make sure that the installation personnel of the customer are not changed during the installation
- Must make sure that the installation personnel have access to the operation manual

5.3 Installation Personnel

Only Rieter personnel or Rieter-approved personnel are permitted to install the machine or to do the supervision of the installation.

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6 Commissioning

This chapter contains information about:

- The commissioning personnel
- The recommissioning after a temporary decommissioning

6.1 Commissioning Personnel

Only Rieter personnel or Rieter-approved personnel are permitted to do the commissioning of the machine or to do the supervision of the commissioning.

6.2 Recommissioning after a Temporary Decommissioning

The operating company must make sure that the warning signs, the mandatory signs, and the prohibition signs are possible to be read.

For the recommissioning of the machine, the checklist that follows is to be used:

- The machine is in a damage-free condition.
- The power supply is connected.
- The compressed-air supply is connected.
- The anti-corrosion agent is removed.
- All technology components are clean.
- Tension is applied to all timing belts, flat belts, or V-ribbed belts.
- The main switch is not padlocked.
- The direction of rotation of the motors is examined.
- Necessary operating fluids are filled.

6.3 Doing the Commissioning without Material

This chapter contains the information about commissioning without material for the machine.

6.3.1 Doing a Check of the Mechanical Functions

1. Remove all cotton and tools from the machine.
2. Remove the belt of the main drive.
3. Open the top detaching roller.
4. Slowly turn the top pulley in the direction of the arrow that is shown on the front shield.
5. Feel the compression of the nipper spring assembly.
6. If the index disk is easy to turn 1 full rotation:

⇨ The compression of the nipper spring assembly has the largest resistance.

⇨ The mechanic resistance is correct.

7. If the index disk is not easy to turn 1 full rotation:

   ⇨ The compression of the nipper spring assembly is not possible to be felt.

8. To find the cause for the resistance, try to turn the part of the mechanism.
9. If insufficient lubricant is felt at some bearings, lubricate the bearings where lubrication is necessary.
10. Make sure that the lubricant is at the lubrication point.

    ⇨ A small quantity of released lubricant is seen at the bearing position.

Result The check of the mechanical functions is done.

6.3.2 Doing the Commissioning of the Machine

Prerequisites Make sure that the criteria are obeyed:

✓ An approved electrician is necessary to do the commissioning of the machine.

1. Tell the plant electrician to examine the voltage of the supply line.
2. Set the main switch to the position ON.
3. Switch on all motor protection switch.
4. Measure the voltage on the input terminals of the main switch.
5. Measure the voltage on the output terminals of the main switch.

   ⇨ If the difference between the measured voltages of the main switch is less than 1 V, the main switch is installed correctly.

6. If the difference between the measured voltages of the main switch is more than 1 V, do a check of the main switch.
7. If the main switch is defective, replace the main switch.
8. Do a check of the phase monitoring relay.

   ⇨ If the LED R/T is on, the sequence of the phases is correct.

9. If the LEDs F1 and F2 flash by turns, do a check of the wiring of the supply line.
10. Remove the belts.
11. Move the can changer forward and rearward in the service mode.
12. Examine the rotation direction of the motor.
13. If the direction of the can changer motor is incorrect, do a check of the wiring between EC1 and EC3.
14. Do a check of the direction of the can changer at the delivery unit.

Result The commissioning of the machine is done.

6.3.3 Doing a Check of the Electrical Equipment

Prerequisites Make sure that the criteria are obeyed:

- ✓ An approved electrician is necessary to check the electric equipment.
- ✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Make sure that the electrician removes the fuses.
2. Do a check of the protective ground wires in the machine.
3. To do a check of the safety devices, refer to the electric documentation.
4. Check if the protective ground conductors are connected correctly.
5. Make an inspection report.
6. If the protective ground wires are connected incorrectly, do not start the machine.
7. To adjust the protective ground wires, refer to the electrical documentation.
8. Make sure again that the protective ground wires are connected correctly.
9. Compare the circuit diagram number on the drawing with the label information in the control cabinet.
10. Make sure that all cables are connected.
11. Make sure that all connectors are connected.
12. Tighten all terminals, but not the spring terminals.
13. Examine if the protection switches are adjusted correctly.
14. Examine the current consumption in amps on the motor identification plates.
15. Examine the setting of the safety switches.
16. If the setting of the safety switches is incorrect, adjust the safety switches with a screwdriver.

    ⇨ The safety switches are adjusted.

Result The check of the electric equipment is done.

6.3.4 Blowing through the Pneumatic Supply Line

⚠ **WARNING**

Explosive release of compressed air!

Risk of eye injuries

- ▶ Use eye protection.
- ▶ Slowly release the compressed air.

Prerequisites Make sure that the criteria are obeyed:

- ✓ All the internal pneumatic connections are done.

1. Make sure that supply pressure is 0.

2. Make sure that the primary valve of the machine is closed.
3. Remove the line from the primary valve of the machine.
4. Hold the pneumatic line in hand tightly.
5. Apply the pressure to the supply line slowly.
   ⇨ The dust and water are blown out and cannot go into the pneumatic system of the machine.

Result The pneumatic supply line is cleaned.

6.3.5 Setting the Air Pressure

1. Set the compressed air pressure (*refer to* ▸ *365*).
2. Set the lap carrier.
3. Set the pressure of the top detaching rollers.
4. Set the air pressure for the deflection aid.
5. Set the speed of the second can changer.
6. Set the pressure for the AEROpic (*refer to* ▸ *414*).
7. Set the pressure for the detaching top rollers during a lap change.

Result The air pressure is set.

6.3.6 Setting the Suction Pressure

1. Set the suction pressure before the commissioning with raw material becomes done.
2. Do a check of the suction rate when the machine is in production.

Result The suction pressure is set.

6.3.7 Examining the Power Supply of the Machine

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position ON.

1. Examine if the LED of the power supply is on.
2. If the LED of the power supply is not on, tell the electrician to find a solution for the problem.

Result The power supply of the machine is examined.

6.3.8 Examining the Safety Circuit

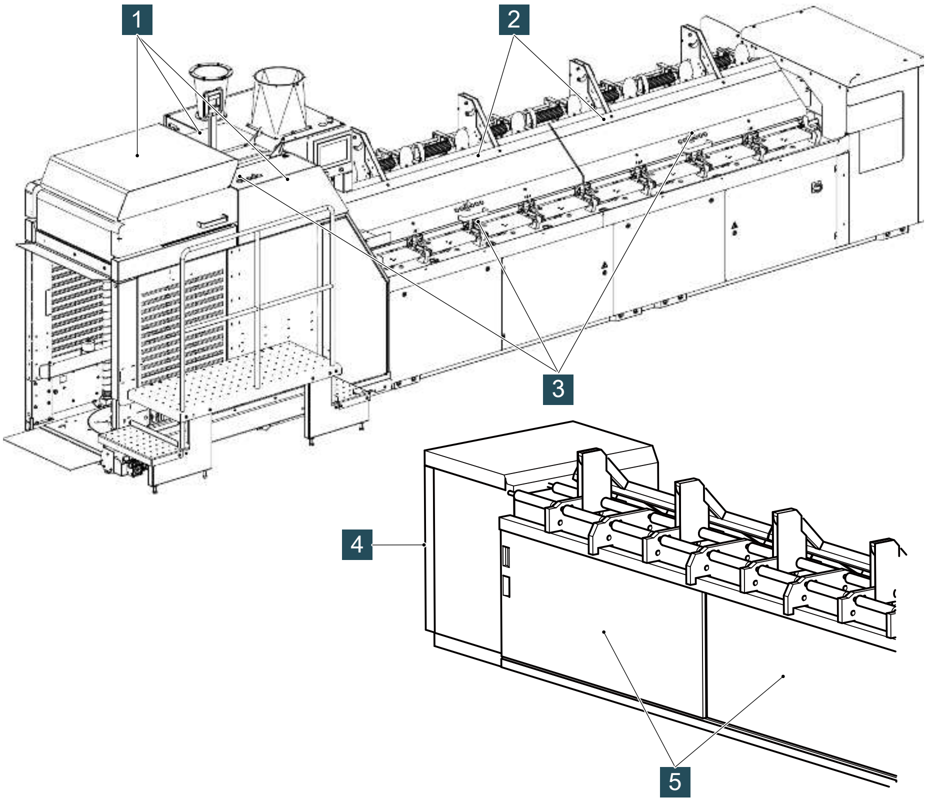

Figure 103: Safety circuit

1	Drafting system hood	2	Combing unit hood
3	Emergency stop button	4	Head stock door
5	Sliding door		

Prerequisites Make sure that the criteria are obeyed:

✓ The machine has no faults and no warning messages.

1. Examine if the machine is ready for operation.
2. Do a test of the safety circuit in the table that is shown before.
3. If the functions of the safety circuit are correct, record the test in the protocol.
4. If a function of the safety circuit is incorrect, replace the defective element and do the test again.

Result The safety circuit is examined.

6.3.8.1 Examining the Emergency Stop Button

1. Push the emergency stop button.

   ⇨ A fault message with the name of the pushed emergency stop button is shown on the data screen.

2. Unlock the emergency stop button.
3. Push the jog button.
   ⇨ The fault message goes out of the view.
4. Do the same procedure with each emergency stop button.
5. Monitor the machine function.
6. If the machine does not operate as given before, correct the faults.

Result The emergency stop button is examined.

6.3.8.2 Examining the Drafting System Hood

1. Open the drafting system hood.
2. Monitor the machine function.
3. If the machine does not operate as given before, correct the faults.

Result The drafting system hood is examined.

6.3.8.3 Examining the Sliding Doors

1. Open the sliding door at the rear right side of the machine.
2. Monitor the machine function.
3. If the machine does not operate as given before, correct the faults.

Result The sliding doors are examined.

6.3.8.4 Examining the Combing Unit Hoods

1. Open the combing unit hood on the left side of the machine.
2. Monitor the machine function.
3. If the machine does not operate as given before, correct the faults.

Result The combing unit hoods are examined.

6.3.8.5 Examining the Head Stock Door

1. Open the head stock door.
2. Monitor the machine function.
3. If the machine does not operate as given before, correct the fault.

Result The head stock door is examined.

6.3.9 Adapting the Can Changer to the Can

The procedure of adapting the can changer to the can is as follows:

1. Set the position sensors of the can changer.
2. Set the distance between the can guides and the can.

3. Set the distance between the sliver and the can.
4. Set the empty-can indicator. (CD 1 200 mm)

Result The can changer is adapted to the can.

6.3.9.1 Setting the Position Sensor of the Can Changer (CD 600 / 1000)

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Loosen the screws 2 at the position sensor 1.

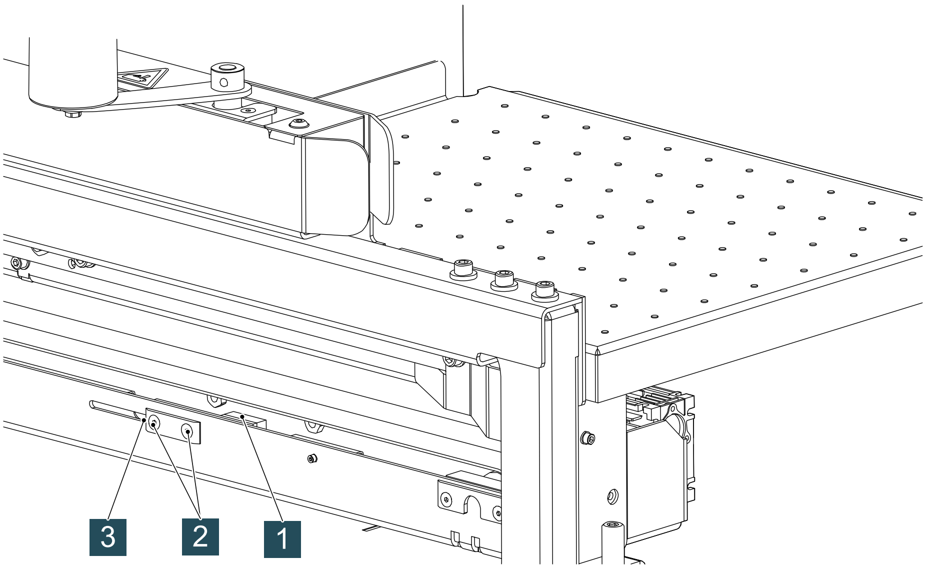

Figure 104: Position sensor of the can changer CD 600 / 1000 mm

2. Move the slide block 3 to the right end of the slot.
3. Tighten the screws 2 at the position sensor 1.

Result The position sensor of the can changer is set.

6.3.9.2 Setting the Position Sensors of the Can Changer (CD 1200)

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Loosen the screws 2 at the position sensor 1 on the can table side.

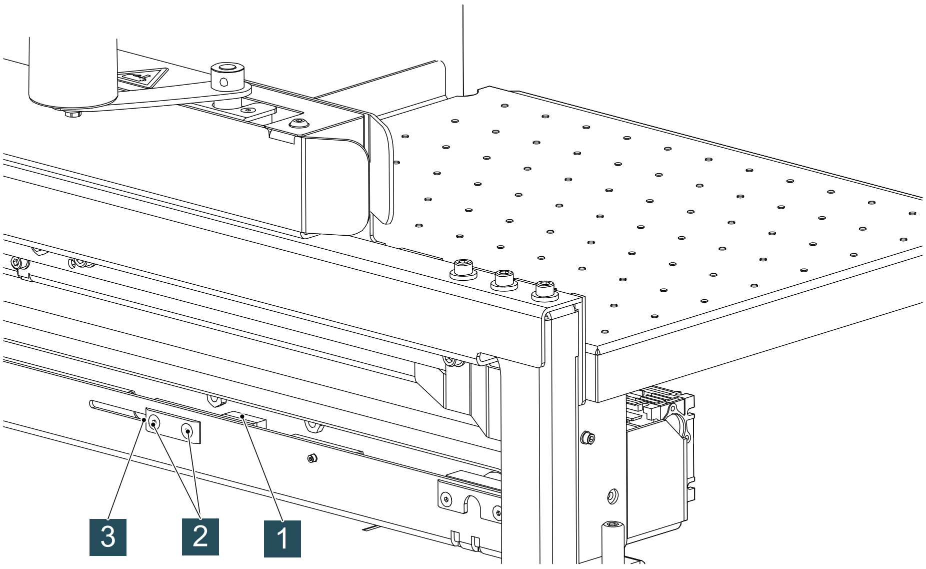

Figure 105: Position sensor of the can changer CD 1200

2. Move the slide block 3 to the right end of the slot.
3. Tighten the screws 2 at the position sensor 1.
4. Loosen the screws 2 at the position sensor 4 and 5.

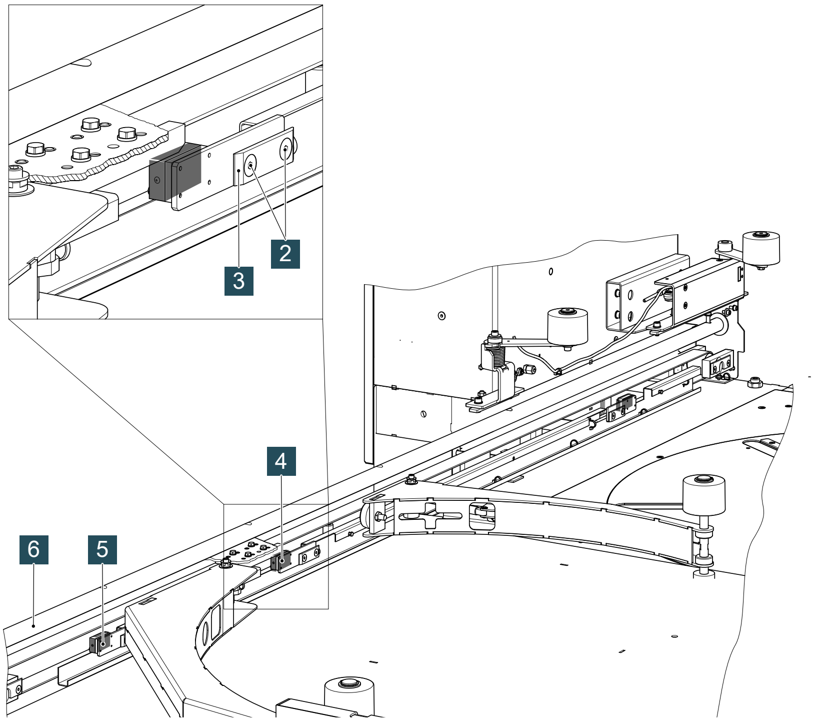

Figure 106: Position sensors of can changer

5. Set the distance A between the left side of the position sensor 5 and the left side of the housing 6 to 428 mm.

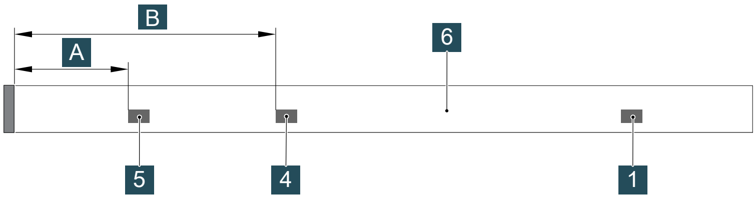

Figure 107: Standard position of the position sensors

6. Tighten the screws 2 at the position sensor 5.
7. Set the distance B between the left side of the position sensor 4 and the left side of the housing 6 to 989 mm.
8. Tighten the screws 2 at the position sensor 4.

Result The position sensors of the can changer are set.

6.3.9.3 Setting the Empty-Can Indicator (CD 1200)

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Loosen the screws 1 and 2 at the empty-can indicator 5.

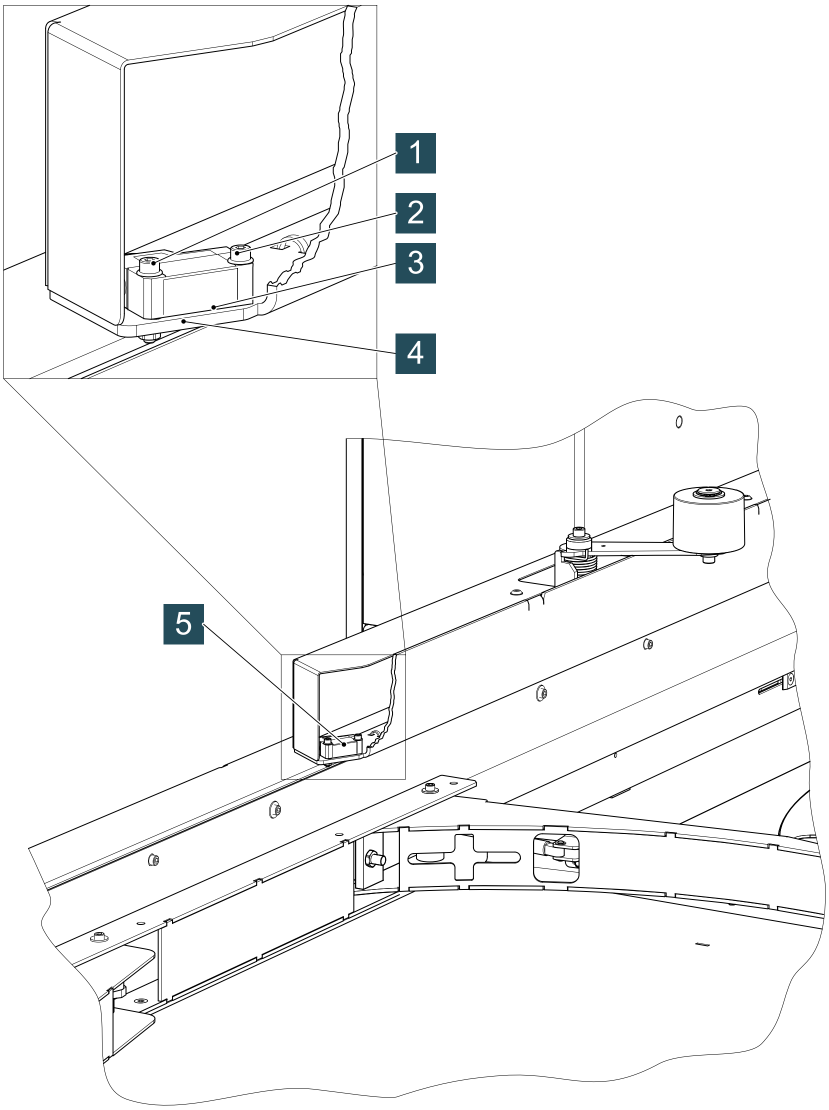

Figure 108: Empty-can indicator

2. Turn the empty-can indicator 5 around the screw 2.

   ⇨ The edge of the empty-can indicator 5 is parallel to the edge of the groove 4.

3. Tighten the screws 1 and 2 at the empty-can indicator 5.

Result The empty-can indicator is set.

6.4 Doing the Commissioning with the Raw Material

1. Speak with the customer about the quality and the productivity expectations.
2. Do all settings for the necessary raw material.
3. Make sure that the power supply is off when the raw material is set.

4. Start the machine with the raw material.
5. Obey all instructions when commissioning the machine with raw material.

Result The commissioning with the raw material is done.

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7 Operation

This chapter contains information about:

- The operating personnel
- The name and the location of the display elements and the operating elements
- The operating units
- How to adjust the machine without material and with material
- How to start the machine and the operation procedure
- The operation of the machine during the operation procedure
- How to stop the machine and the operation procedure

7.1 Operating Personnel

Only Rieter-approved personnel are permitted to operate the machine.

7.2 Display Elements and Operating Elements

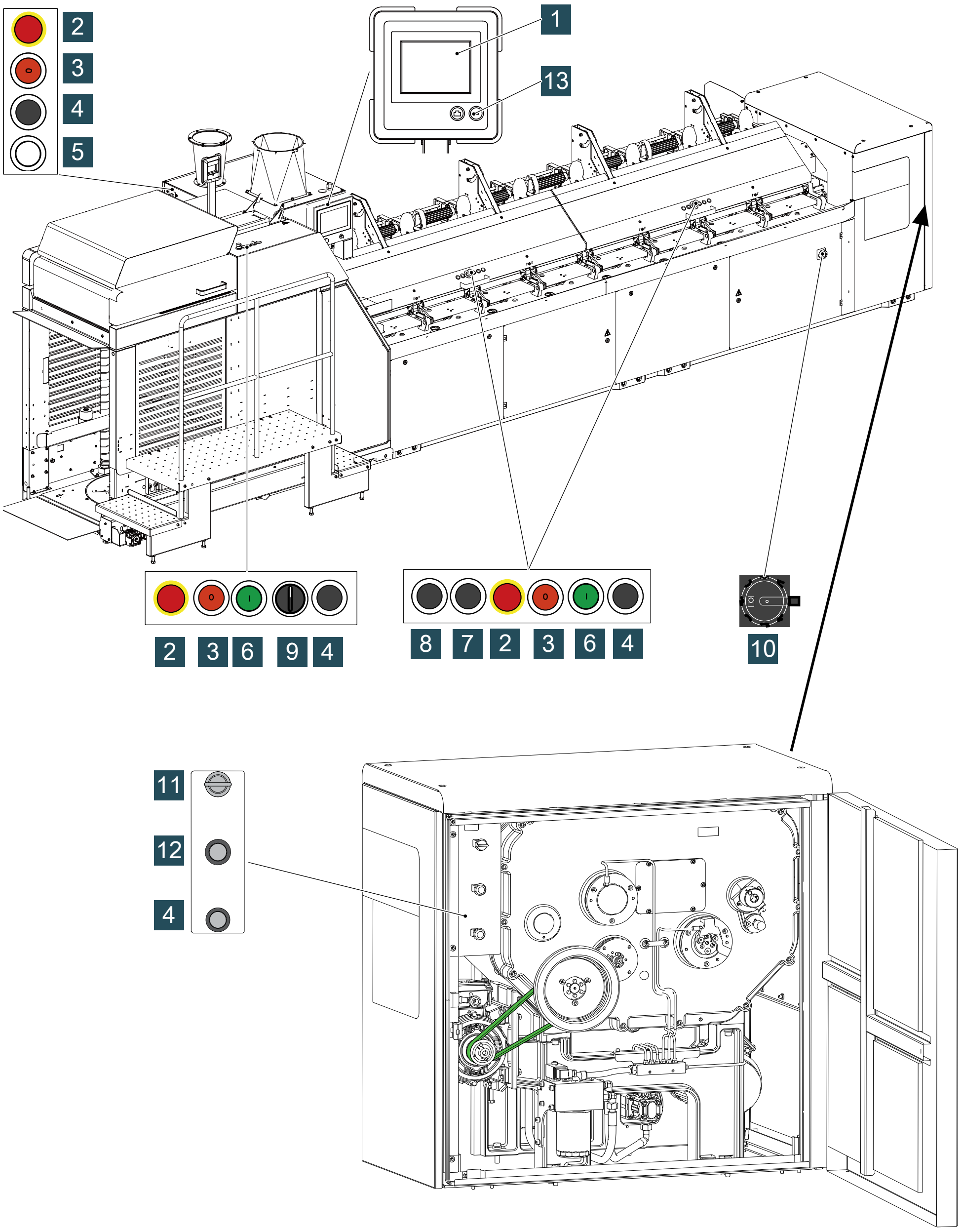

Figure 109: Display and operating elements

1	Operating unit	2	Emergency stop button
3	Stop button	4	Jog button
5	Noil measurement button	6	Start button
7	Tube ejecting button	8	Lap feeding button
9	Rotary switch	10	Main switch
11	By-pass safety circuit switch	12	Brake release button
13	Key switch		

The ROBOlap machine does not have the buttons 7 and 8. The procedures to eject the tubes and to supply the laps are automatic.

7.2.1 Operating Elements

This chapter contains information about the operating elements of the machine.

7.2.1.1 Emergency Stop Button

The emergency stop button is only to be used in an emergency. If the emergency stop button is pushed:

- The machine stops immediately.
- All connected peripheral machines of the machine stop immediately.

To unlock the emergency stop button, the emergency stop button is to be turned.

7.2.1.2 Noil Measurement Button

When the noil measurement button is pushed, the production mode starts with a time interval of noil measurement.

7.2.1.3 Jog Button

The jog button is black.

If the jog button is pushed and held, the machine starts in the low speed.

The low speed of the machine is used for the actions that follow:

- Move the raw material into the machine.
- Set the machine to the necessary position.

If the jog button is pushed for a short time, the top rollers of the drafting system and the detaching top rollers apply the load pneumatically. The machine does not start. To release the pressure, push the stop button.

Jog Button in the Head Stock

In the head stock, the machine only starts in a low speed if the user pushes the jog button and turns the by-pass safety circuit switch at the same time.

Jog Button in the Delivery Unit

In the delivery unit, if the drafting system hood is open, the machine only starts in a low speed if the user pushes the jog button and turns and holds the by-pass safety circuit switch at the same time.

7.2.1.4 Stop Button

The stop button is red.

If the stop button is pushed, the machine stops and the drafting system automatically releases the load after a specified time.

7.2.1.5 Start Button

The start button is green.

Before the start button is pushed, make sure that all hoods and all doors of the machine are closed.

The production mode can be started with the start button. If the machine has an error, the machine cannot be started.

7.2.1.6 Tube Ejecting Button

The machine has 2 tube ejecting buttons at each 4 combing units of the longitudinal section.

The 2 tube ejecting buttons control the related 4 left combing units and the related 4 right combing units.

If the tube ejecting button is pushed, the tubes are ejected and moved to the SERVOtrolley.

7.2.1.7 Lap Feeding Button

The machine has 2 lap feeding buttons at each 4 combing units of the longitudinal section.

The 2 lap feeding buttons control the related 4 left combing units and the related 4 right combing units.

If the lap feeding button is pushed, the lap carriers lift and the full laps are moved to the piecing position.

7.2.1.8 Rotary Switch

The rotary switch has the functions that follow:

- If the rotary switch is turned to the right position II and released after a short time, the load is applied to the drafting system. The drafting system is released automatically after 1 min.
- If the rotary switch is turned to the left position I and released after a short time, the load is released from the drafting system.
- If the rotary switch is turned to the right position II and held:
    - The load is applied to the drafting system.
    - A blowing pulse moves the web end to the sliver funnel.

7.2.1.9 Main Switch

The main switch has the position 0 or OFF and the position I or ON. The main switch is set to the position 0 or OFF to disconnect the power supply from the machine. The main switch is set to the position I or ON to connect the power supply to the machine. The main switch is not an emergency stop button.

Locking the Main Switch The user must set the main switch to the position 0 or OFF and padlock the main switch before maintenance works and changeover works.

7.2.1.10 Key Switch

The key switch is operated with a key.

The key is turned to the left side during usual operation. The approved personnel keep the key.

The key is turned to the right side for the jog mode. If the drafting system hood is open, only when the key switch is turned to the right side, the user can start the machine in a low speed with the jog button.

7.2.1.11 By-Pass Safety Circuits Switch

If the by-pass safety circuit switch is turned to the right side and held, the safety circuit of the machine is bypassed.

The by-pass safety circuit switch moves back to home position automatically when it is released.

By-Pass Safety Circuit Switch in the Head Stock

In the head stock, the machine only starts in a low speed if the user pushes the jog button and turns and holds the by-pass safety circuit switch at the same time.

7.2.1.12 Brake Release Button

If the brake release button is pushed, the brake of the head stock is released.

7.2.2 Display Elements

This chapter contains information about the display elements of the machine.

7.2.2.1 LED Signal Lamps

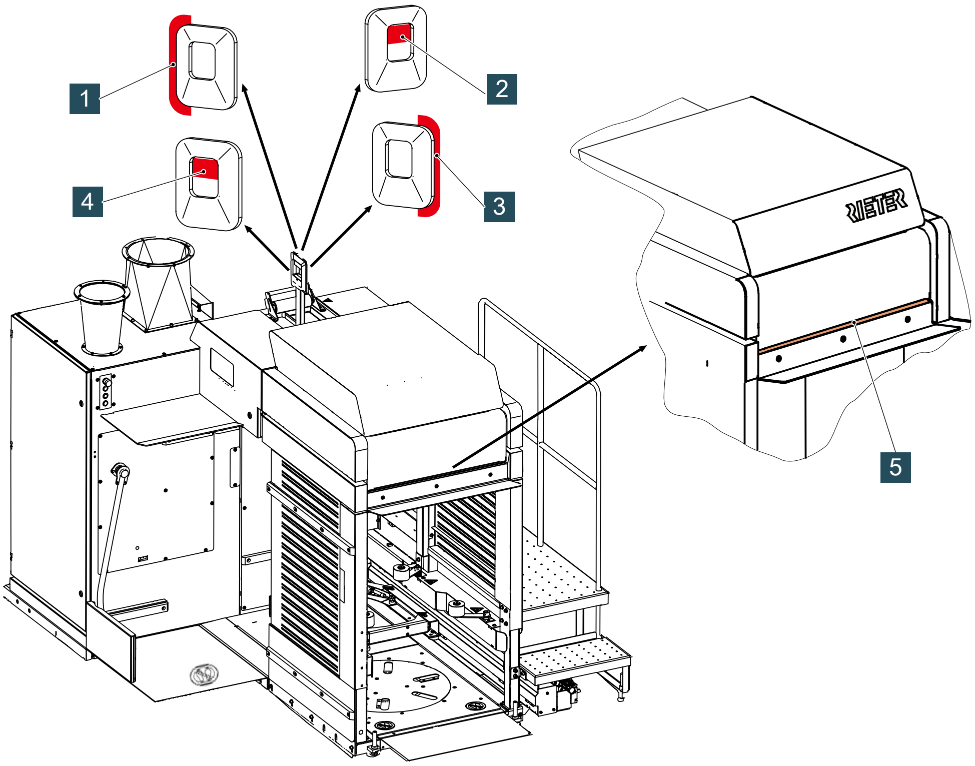

Figure 110: LED signal lamps

1	LED signal lamp for the combing unit side	2	LED signal lamp for the front side
3	LED signal lamp for the draw frame side	4	LED signal lamp for the rear side
5	LED signal lamp for can change		

Functions of the LED Signal lamps

Machine Status	LED Status	Description
The machine is in operation.	The LED signal lamp 1 is on.	The laps are supplied to the machine.
	The LED signal lamp 3 is on.	An empty can is supplied to the machine.
The machine is at a standstill.	The LED signal lamps 3 and 4 are on.	The can changer has a fault.
	The LED signal lamps 3 and 2 are on.	The drafting system has a fault.
	The LED signal lamps 1 and 4 are on.	The fly duct at the rear side has a fault.

Machine Status	LED Status	Description
	The LED signal lamps 1 and 2 are on.	The combing head at the front side has a fault.
The machine is in can change procedure.	The LED signal lamp 5 flashes.	The LED signal lamp 5 flashes during the can change procedure.

7.3 Machine Operating Unit

The machine operating unit shows the information of the machine. The user does the settings for the machine through the machine operating unit.

Only tap the surface of the operating unit with a finger or a touch screen pen.

7.3.1 List of Data Screens

Screen Number	Screen Name	Page
1	Settings	*Refer to ▸ 143*
1.1	Basic configuration	*Refer to ▸ 145*
1.3	Delivery unit	--
1.3.1	Can changer	*Refer to ▸ 147*
1.3.2	Sliver feed	*Refer to ▸ 150*
1.3.3	Delivery	--
1.3.3.1	Delivery	*Refer to ▸ 151*
1.3.3.2	Sliver formation	*Refer to ▸ 152*
1.3.3.3	Coiler	*Refer to ▸ 154*
1.3.3.4	Sliver cutter	*Refer to ▸ 155*
1.3.4	Suction	*Refer to ▸ 156*
1.3.5	Drafting	--
1.3.5.1	Drafting	*Refer to ▸ 158*
1.3.5.2	Load	*Refer to ▸ 160*
1.3.5.3	Distances	*Refer to ▸ 162*
1.4	Laps	--
1.4.1	Lap	*Refer to ▸ 164*
1.4.2	Tension	*Refer to ▸ 167*
1.5	Combing	--
1.5.1	Brush	--

Screen Number	Screen Name	Page
1.5.1.1	Brush	*Refer to ▸ 170*
1.5.1.2	Circular-comb cleaning	*Refer to ▸ 172*
1.5.1.3	Suction	*Refer to ▸ 175*
1.5.2	Detaching	*Refer to ▸ 177*
1.5.3	Nipper	*Refer to ▸ 179*
1.5.4	Comb	--
1.5.4.1	Circular comb	*Refer to ▸ 181*
1.5.4.2	Top comb	*Refer to ▸ 183*
1.6	Head stock	*Refer to ▸ 185*
1.7	ROBOlap	--
1.7.1	ROBOlap 1	*Refer to ▸ 187*
1.7.2	ROBOlap 2	*Refer to ▸ 188*
1.7.3	ROBOlap 3	*Refer to ▸ 190*
1.7.4	ROBOlap 4	*Refer to ▸ 192*
2	Quality	*Refer to ▸ 193*
2.1	Values and Graphs	--
2.1.1	A% and CV graph	*Refer to ▸ 194*
2.1.2	Values	*Refer to ▸ 195*
2.1.3	Spectrogram	*Refer to ▸ 196*
2.2	Thick places	*Refer to ▸ 196*
2.2.1	by time	*Refer to ▸ 196*
2.2.2	by can	*Refer to ▸ 196*
2.3	Noil	--
2.3.1	Noil 1	*Refer to ▸ 199*
2.3.2	Noil 2	*Refer to ▸ 200*
2.4	Settings	--
2.4.1	A %	*Refer to ▸ 201*
2.4.2	Thick places	*Refer to ▸ 202*
2.5	Reference measurement	--
2.5.1	A %	*Refer to ▸ 203*
2.5.2	CV	*Refer to ▸ 204*
3	Analysis	*Refer to ▸ 205*

Screen Number	Screen Name	Page
3.1	Top 5 Notifications	--
3.2	Energy	--
3.2.1	Live Data	*Refer to ▸ 206*
3.2.2	Counter	*Refer to ▸ 207*
3.2.3	History	*Refer to ▸ 208*
3.2.4	Graph	*Refer to ▸ 209*
3.2.5	Inverter power	*Refer to ▸ 210*
3.3	Machine efficiency	--
3.3.3	Graph	*Refer to ▸ 211*
3.4	Production	--
3.4.3	Graph	*Refer to ▸ 212*
3.6	Shift statistics	--
3.6.1	Current shift	*Refer to ▸ 213*
3.6.2	Last shifts	*Refer to ▸ 214*
3.6.3	Shift totals	*Refer to ▸ 215*
3.10	Material flow Fault counter	*Refer to ▸ 216*
3.10.1	Material flow Fault counter	*Refer to ▸ 216*
3.10.2	Material flow Fault counter	*Refer to ▸ 216*
4	Notifications	*Refer to ▸ 218*
5	Recipes	*Refer to ▸ 219*
7	Service	*Refer to ▸ 222*
7.1	Manual functions	--
7.1.1	Safety circuit	--
7.1.1.1	Safety circuit 1	*Refer to ▸ 224*
7.1.1.2	Safety circuit 2	*Refer to ▸ 225*
7.1.1.3	Safety circuit 3	*Refer to ▸ 226*
7.1.2	Hardware buttons	--
7.1.2.1	Hardware buttons 1	*Refer to ▸ 228*
7.1.2.2	Hardware buttons 2	*Refer to ▸ 229*
7.1.2.3	Hardware buttons 3	*Refer to ▸ 230*
7.1.2.4	Hardware buttons 4	*Refer to ▸ 231*
7.1.3	Drafting system	--

Screen Number	Screen Name	Page
7.1.3.1	Drafting system 1	*Refer to ▸ 232*
7.1.3.2	Drafting system 2	*Refer to ▸ 234*
7.1.3.3	Drafting system 3	*Refer to ▸ 235*
7.1.4	Delivery	--
7.1.4.1	Delivery 1	*Refer to ▸ 237*
7.1.4.2	Delivery 2	*Refer to ▸ 239*
7.1.4.3	Delivery 3	*Refer to ▸ 241*
7.1.4.4	Delivery 4	--
7.1.5	Combing	--
7.1.5.1	Combing 1	*Refer to ▸ 242*
7.1.5.2	Combing 2	*Refer to ▸ 243*
7.1.5.3	Combing 3	*Refer to ▸ 244*
7.1.5.4	Combing 4	*Refer to ▸ 246*
7.1.5.5	Combing 5	*Refer to ▸ 247*
7.1.6	Head stock	--
7.1.6.1	Head stock 1	*Refer to ▸ 248*
7.1.6.2	Head stock 2	*Refer to ▸ 249*
7.1.7	ROBOlap	--
7.1.7.1	ROBOlap 1	*Refer to ▸ 250*
7.1.7.2	ROBOlap 2	*Refer to ▸ 251*
7.1.7.3	ROBOlap 3	*Refer to ▸ 252*
7.1.7.4	ROBOlap 4	*Refer to ▸ 253*
7.1.7.5	ROBOlap 5	*Refer to ▸ 255*
7.2	Monitoring	--
7.2.1	Speed	*Refer to ▸ 256*
7.2.2	Pressure and Temperature	*Refer to ▸ 257*
7.2.3	Firmware version	*Refer to ▸ 258*
7.2.4	Graph	*Refer to ▸ 259*
7.3	Calibration	--
7.3.1	Index 24	*Refer to ▸ 260*
7.3.2	Quality	*Refer to ▸ 262*
7.4	Miscellaneous	--

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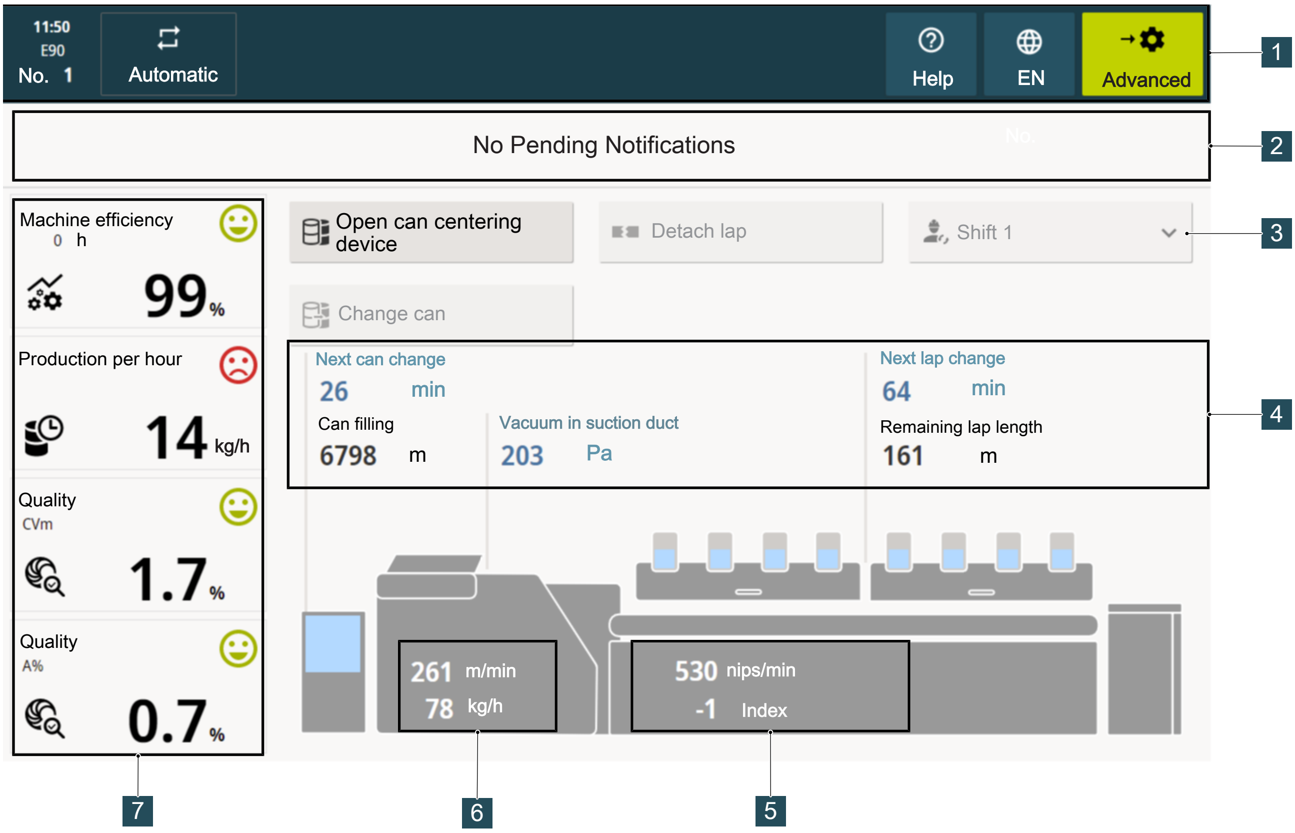
7.4.1	Miscellaneous 1	*Refer to ▸ 266*
7.4.2	Miscellaneous 2	*Refer to ▸ 268*
8	General Settings	--
8.1	User Management	--
8.1.1	Users	*Refer to ▸ 270*
8.2	Shift	--
8.2.1	Basic Settings	*Refer to ▸ 271*
8.2.2	Schedule	*Refer to ▸ 272*
8.3	Network	*Refer to ▸ 273*
8.6	Time and Date	*Refer to ▸ 274*
8.7	Simple-Mode Settings	--
8.7.1	KPI 1	*Refer to ▸ 275*
8.7.2	KPI 2	*Refer to ▸ 276*
8.7.3	KPI 3	*Refer to ▸ 278*
8.7.4	KPI 4	*Refer to ▸ 279*
9	Info and Logs	*Refer to ▸ 281*
9.1	Machine information	*Refer to ▸ 282*
9.2	Machine Log	--
9.3	Notification Log	*Refer to ▸ 283*
12	Operation Manual	*Refer to ▸ 285*

7.3.2 Data Screen of Simple Mode



11:50
E90
No. 1

No Pending Notifications

Machine efficiency 0 h 99 %

Production per hour 14 kg/h

Quality CVm 1.7 %

Quality A% 0.7 %

Next can change 26 min

Can filling 6798 m

Vacuum in suction duct 203 Pa

Next lap change 64 min

Remaining lap length 161 m

261 m/min
78 kg/h

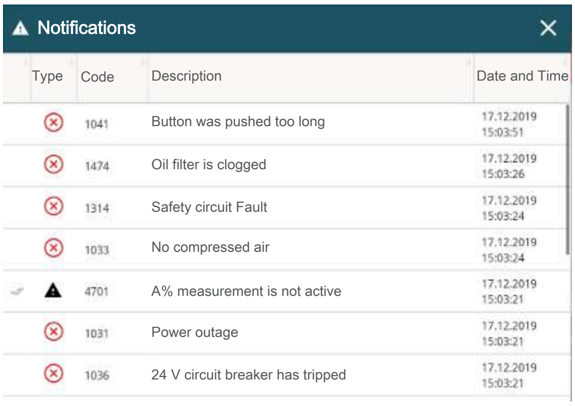
530 nips/min
-1 Index

Figure 111: Data screen of simple mode

Field 1 This field shows the information and settings that follow:

- Current time: the current time can be set in the data screen 8.6.
- Machine information: machine information can be set in the data screen 9.1.
- Operating mode: the current operating mode shows in this field.
- **Help**: the page **Help** or the **Operation Manual** is available with this key.
- **Language**: the language of the data screen can be changed with this key.
- Display mode: the data screen mode can be changed with this key.

Field 2 This field shows the latest notification of the machine. If the field is tapped, the currently active notifications are shown.



Notifications

Type	Code	Description	Date and Time
⊗	1041	Button was pushed too long	17.12.2019 15:03:51
⊗	1474	Oil filter is clogged	17.12.2019 15:03:26
⊗	1314	Safety circuit Fault	17.12.2019 15:03:24
⊗	1033	No compressed air	17.12.2019 15:03:24
▲	4701	A% measurement is not active	17.12.2019 15:03:21
⊗	1031	Power outage	17.12.2019 15:03:21
⊗	1036	24 V circuit breaker has tripped	17.12.2019 15:03:21

Figure 112: Notifications

If a notification is tapped in the list, a window with the fault location, the fault symbol, the fault cause, and the remedy comes into view (*refer to* ▸ *218*).

Field 3 If the option **Automatic** is selected in the field **Shift start** in the data screen 8.2, the shift number changes automatically according to the shift schedule.

If the option **Manual** is selected in the field **Shift start** in the data screen 8.2, the shift number is to be changed manually when the shift is changed.

Field 4 This field shows the current data related to the delivery unit, fly duct vacuum and the laps on the lap rollers.

Field 5 This field shows the current data of production rate and machine index.

Field 6 This field shows the current production data.

Field 7 This field shows the current KPI data that is set in the data screen 8.7.

Machine efficiency

This filed shows the current data of machine efficiency for the last 6 h. The based time of the efficiency rate can be set at **Time-based efficiency rate** on the data screen 8.6.

Production per hour

This field shows the production data for the current shift.

Quality

This field shows the current CV % and A% data.

Touch key: **Open can centering device**

The can centering device can be opened and closed by tapping the key.

Touch key: **Change can**

When tapping this key, a can is changed manually.

Touch key: **Detach lap**

Only the machine with the ROBOlap has this touch key. The batt can be detached from the 8 laps by tapping this key. After the batt is detached, the operator can manually remove the batt and then clean the machine.

There are 2 ways to piece the laps again:

- Put the laps back to the lap rollers, piece the laps manually and then push the start button.
- Put full laps to the lap carrier and push the start button. The laps will be pieced automatically by ROBOlap.

If the laps are not put in the correct position, the fault message **1541 ROBOlap Laps are in wrong positions** is shown.

7.3.3 Data Screen of Advanced Mode

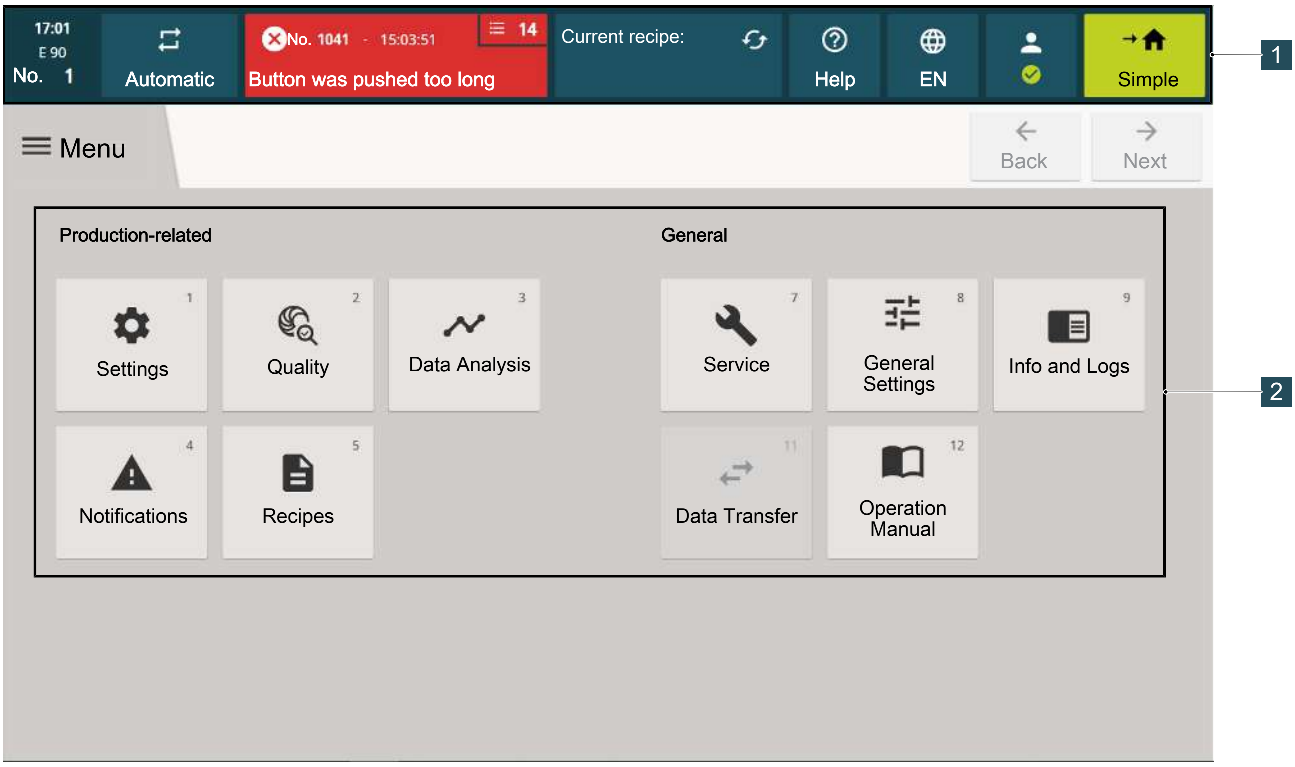

17:01
E 90
No. 1
Automatic
No. 1041 - 15:03:51
14
Button was pushed too long
Current recipe:
Help
EN
Simple
1
Menu
Back
Next
Production-related
General
1 Settings
2 Quality
3 Data Analysis
7 Service
8 General Settings
9 Info and Logs
2
4 Notifications
5 Recipes
11 Data Transfer
12 Operation Manual

Figure 113: Data screen of advance mode

Field 1 This field shows the information and settings that follows:

- Current time: the current time can be set in the data screen 8.6.
- **Machine information**: the machine information can be set in the data screen 9.1.
- Operating mode: this filed shows the current operating mode of the machine.
- Notification: this field shows the newest notification of the machine. If the notification is tapped, the data screen shows.
- **Current recipe:**: this field shows the current recipe that is used by the machine. If this field is tapped, a drop-down list shows. The drop-down list contains 5 functions.

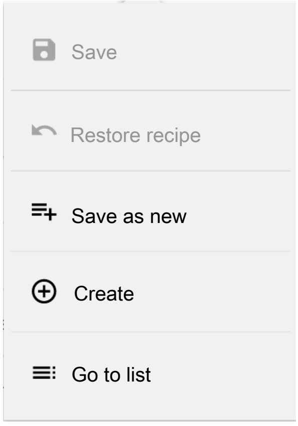
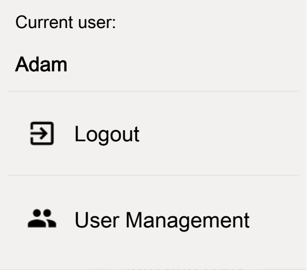


Figure 114: Drop-down menu of ***Current recipe:***

- **Help**: the page **Help** or the **Operation Manual** is available with this key.
- **Language**: the language of the data screen can be changed with this key.
- **User**: A drop-down list shows if this field is tapped. It contains the current user information, the log in key or log out key, and the key with which the user can go to data screen 8.1.



Current user:
Adam

Figure 115: Drop-down list of user

- Display mode: the data screen mode can be changed with this key.

Field 2 Production-related

The production-related settings can be done on the data screens that are shown in this field.

General

The general settings can be done on the data screens that are shown in this field.

7.3.4 Data Screen 1 Settings

This section contains the information about the settings that are available in advanced mode.

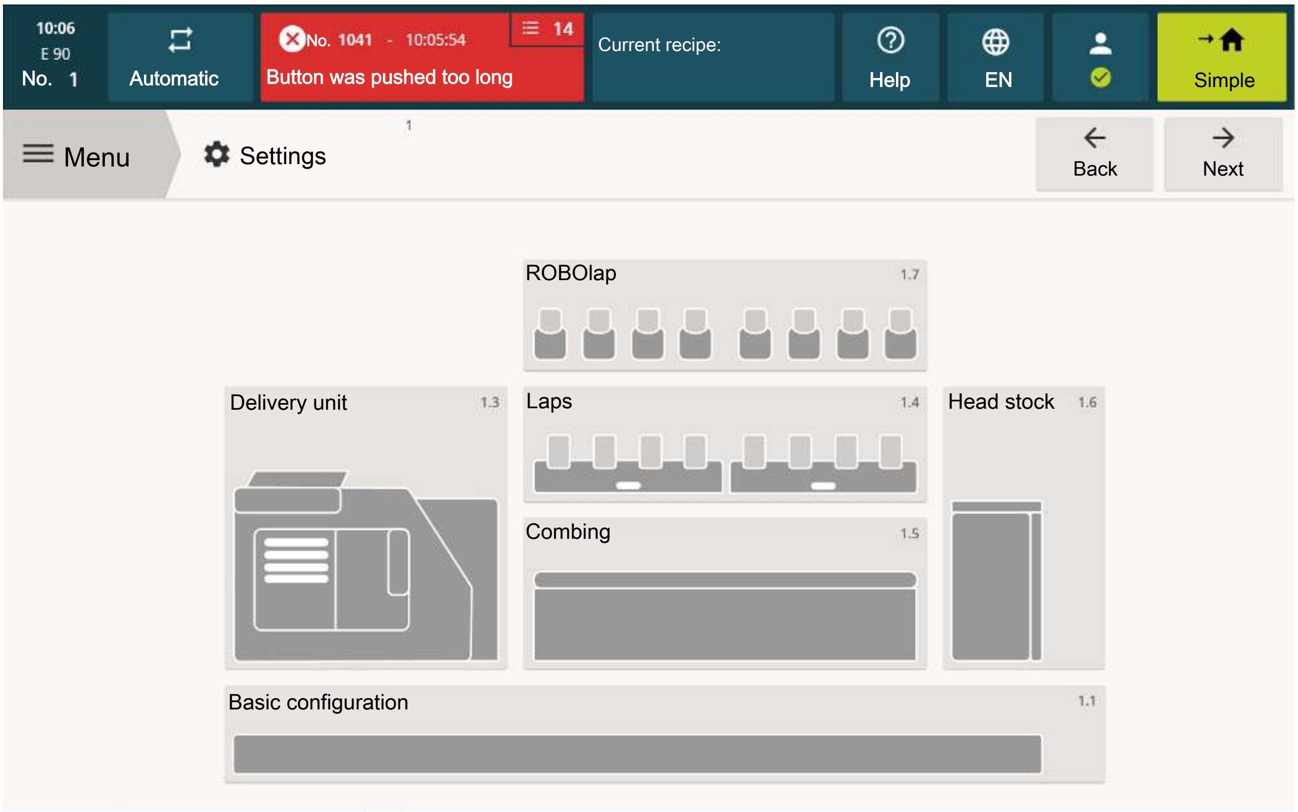

10:06
E 90
No. 1
Automatic
No. 1041 - 10:05:54
14
Button was pushed too long
Current recipe:
Help
EN
Simple
Menu
Settings
1
Back
Next
ROBOlap
1.7
Delivery unit
1.3
Laps
1.4
Head stock
1.6
Combing
1.5
Basic configuration
1.1

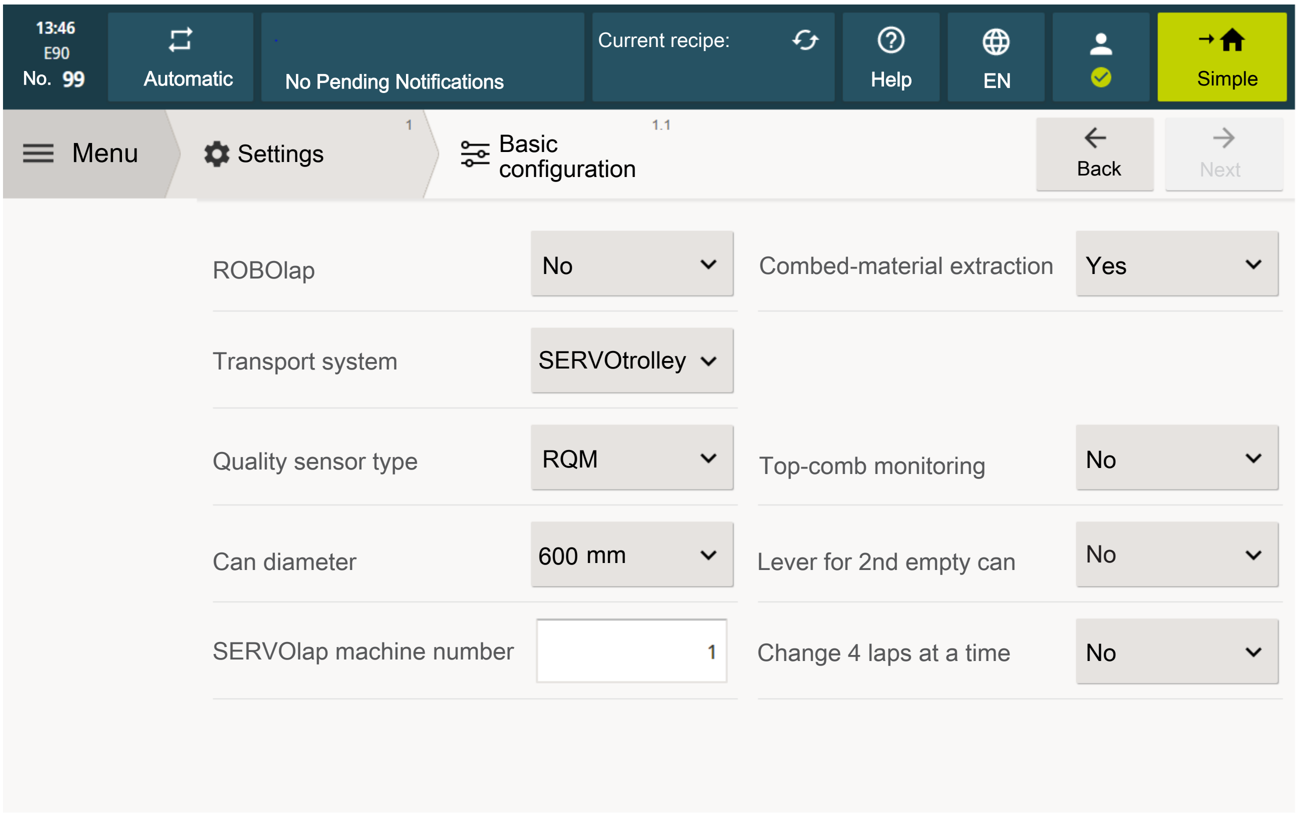
Figure 116: Data screen 1 Settings

The specified settings of the machine are possible to be done in the data screen 1 Settings. This data screen contains the sections that follow:

- Data screen 1.1 **Basic configuration**
- Data screen 1.3 **Delivery unit**
- Data screen 1.4 **Laps**
- Data screen 1.5 **Combing**
- Data screen 1.6 **Head stock**
- Data screen 1.7 **ROBOlap** (This data screen is only shown when **Yes** is selected at **ROBOlap** in data screen 1.1.)

To go to the specified data screen of the section, a section is to be tapped. If the value of a parameter is set, the related section of the machine is shown in the figure on the data screen.

7.3.4.1 Data Screen 1.1 Basic Configuration


13:46
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Settings
1
Basic configuration
1.1
Back
Next

ROBOlap: No

Transport system: SERVOtrolley

Quality sensor type: RQM

Can diameter: 600 mm

SERVOlap machine number: 1

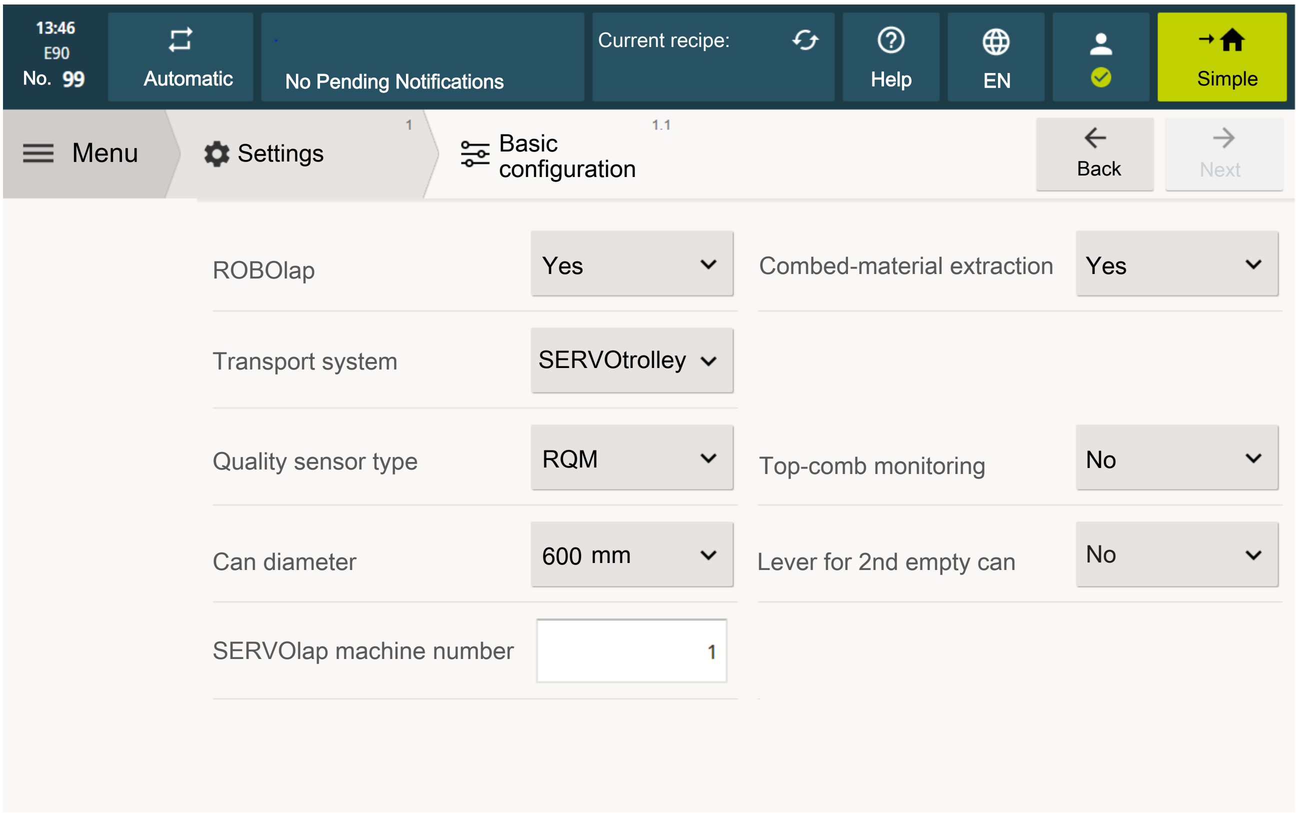
Combed-material extraction: Yes

Top-comb monitoring: No

Lever for 2nd empty can: No

Change 4 laps at a time: No

Figure 117: Data screen 1.1 Basic configuration (without ROBOlap)


13:46
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Settings
1
1.1
Back
Next

Basic configuration

ROBOlap	Yes	Combed-material extraction	Yes
Transport system	SERVOtrolley		
Quality sensor type	RQM	Top-comb monitoring	No
Can diameter	600 mm	Lever for 2nd empty can	No
SERVOlap machine number	1		

Figure 118: Data screen 1.1 Basic configuration (with ROBOlap)

ROBOlap

The option is to be selected in accordance with the used machine.

– **Yes**: The laps become changed automatically.

– **No**: The laps are to be changed manually.

Transport system

The option is to be selected in accordance with the used transport system.

Quality sensor type

The option is to be selected in accordance with the used quality sensor at the machine.

Can diameter

The option is to be selected in accordance with the used can at the delivery unit.

SERVOlap machine number

This is the communication address for SERVOlap. Each comber needs a unique address, which must be entered on the SERVOlap operating unit.

Combed-material extraction

If Combed-material extraction hardware is installed and activated, the option **Yes** must be selected. If not, the option **No** is to be selected.

Top-comb monitoring

If the machine has the top-comb monitoring, the option **Yes** is to be selected. If not, the option **No** is to be selected.

Lever for 2nd empty can

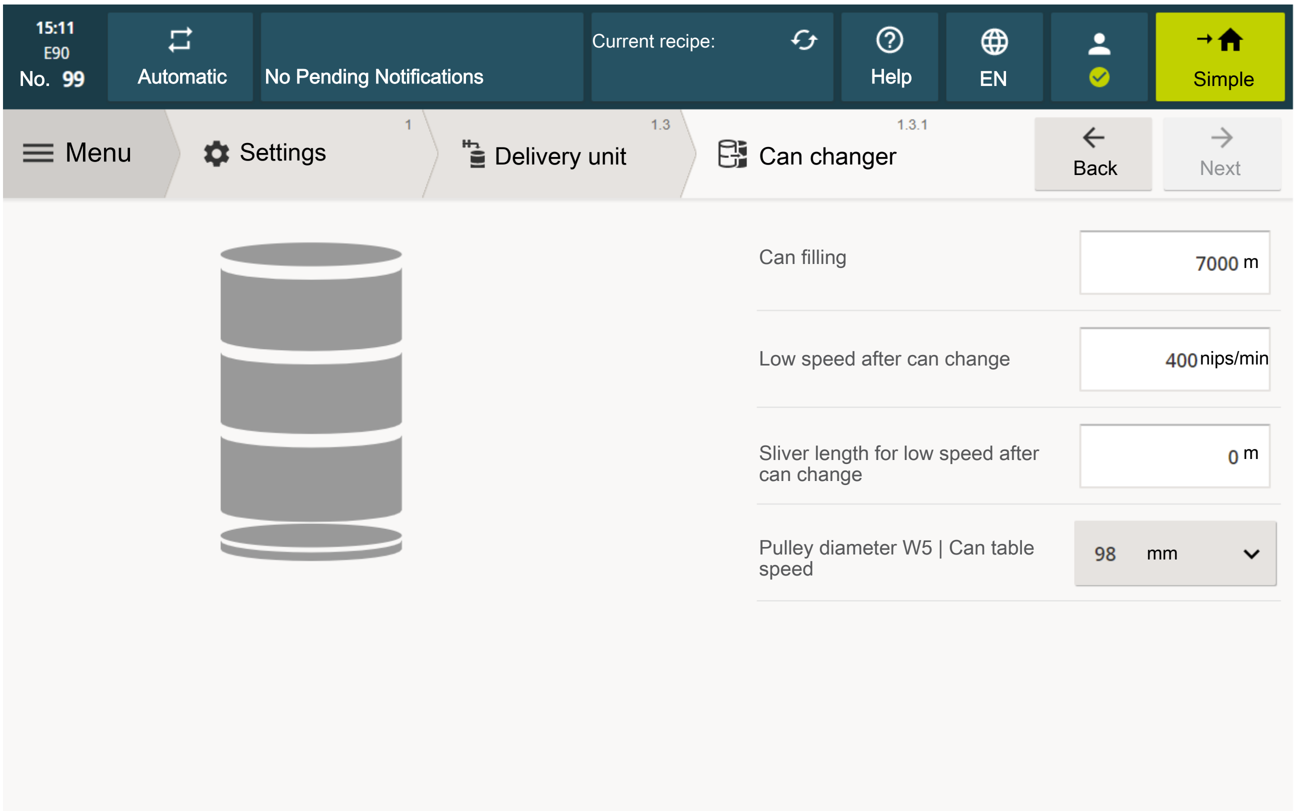
If the 2nd empty can lever is installed, the option **Yes** must be selected. If not, the option **No** is to be selected.

Only the machine with 600 mm diameter can has the 2nd empty can.

Change 4 laps at a time

For machine without ROBOlap, 4 laps can be changed at a time instead of 8 laps. This setting changes the behavior of the tube ejection button and lap feeding button. This setting adds a second lap length counter for the laps.

7.3.4.2 Data Screen 1.3.1 Can Changer


15:11
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Settings
1
Delivery unit
1.3
Can changer
1.3.1
Back
Next

Can filling: 7000 m

Low speed after can change: 400 nips/min

Sliver length for low speed after can change: 0 m

Pulley diameter W5 | Can table speed: 98 mm

Figure 119: Data screen 1.3.1 Can changer

Can filling

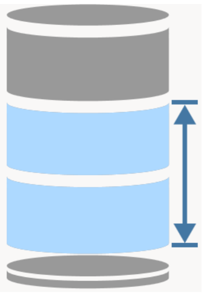


Figure 120: Can filling

The sliver length for a full can be set in this field.

Can Diameter (mm)	Range of Sliver Length	Increment of Sliver Length
600	0 – 1 000	50
1000	0 – 20 000	50
1200	0 – 28 000	50

Low speed after can change

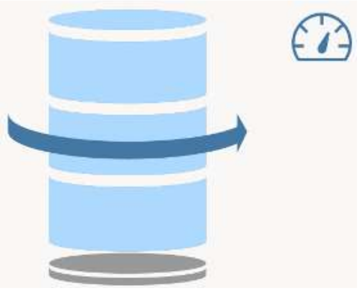


Figure 121: Low speed after can change

If the sliver is out of the can at the first layer, the production speed can be decreased for a short amount of time after a can change.

This low speed can be set in this field.

Sliver length for low speed after can change

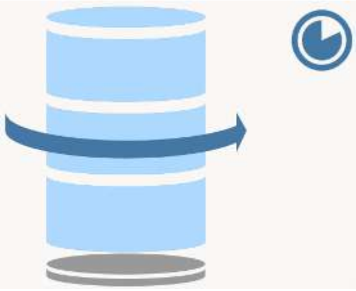


Figure 122: Sliver length for low speed after can change

The sliver length for low speed after can change can be set in this field.

Pulley diameter W5 | Can table speed

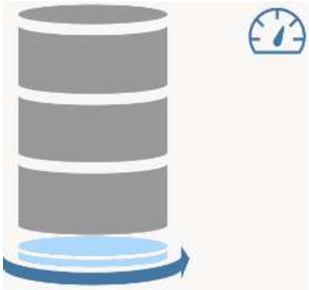
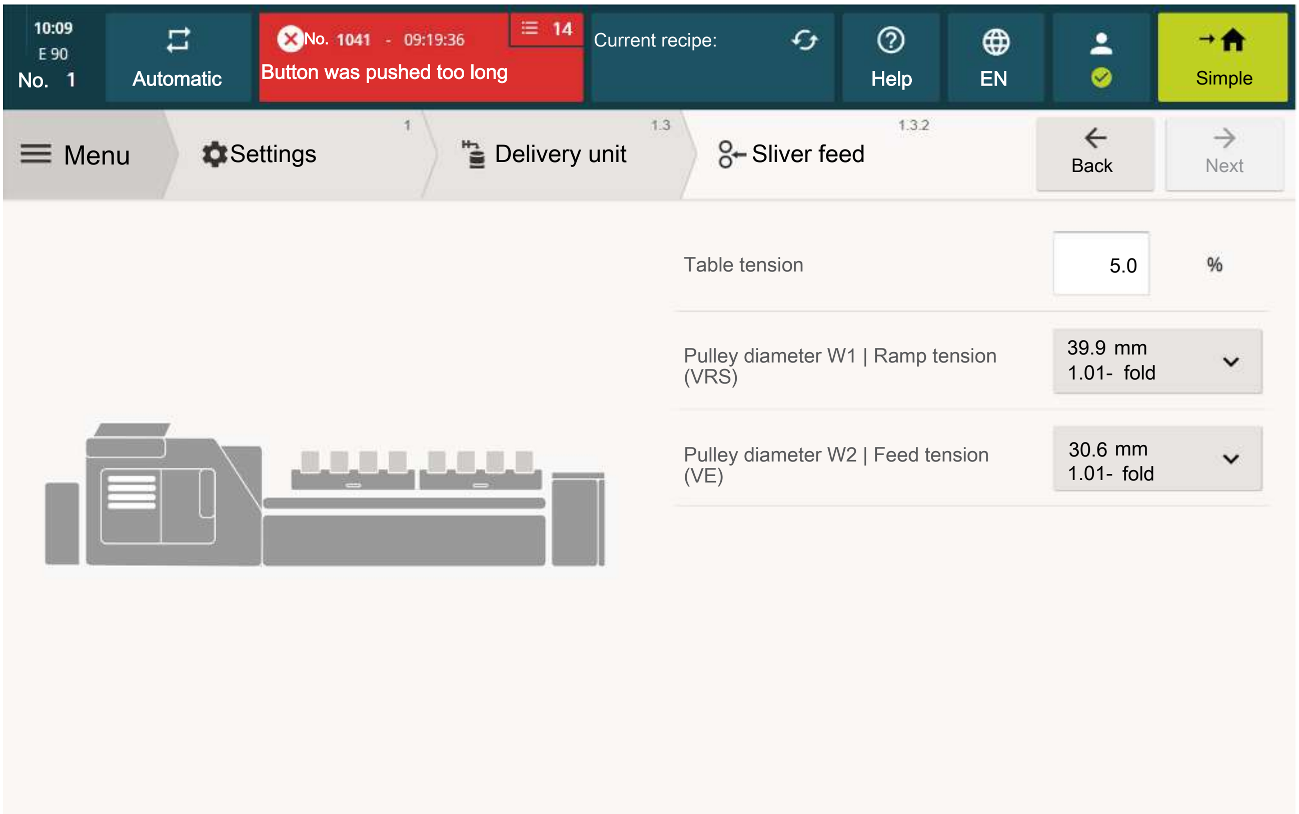


Figure 123: Pulley diameter W5 | Can table speed

The option is to be selected in accordance with the change pulley that is used at position W5 of the delivery unit.

The can plate speed can be changed if the pulley at position W5 is changed (*refer to* ▸ *394*).

7.3.4.3 Data Screen 1.3.2 Sliver Feed


10:09
E 90
No. 1
Automatic
14
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.3
Delivery unit
1.3.2
Sliver feed
Back
Next

No. 1041 - 09:19:36
Button was pushed too long

Table tension	5.0	%
Pulley diameter W1 | Ramp tension (VRS)	39.9 mm 1.01- fold	
Pulley diameter W2 | Feed tension (VE)	30.6 mm 1.01- fold	

Figure 124: Data screen 1.3.2 Sliver feed

Table tension

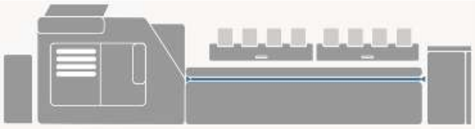


Figure 125: Table tension

The tension between the table calenders and the sliver ramp entry Cylinder can be set in this field (*refer to* ▸ *92*).

The table tension must be as low as possible, without loosening the slivers too much.

Pulley diameter W1 | Ramp tension (VRS)

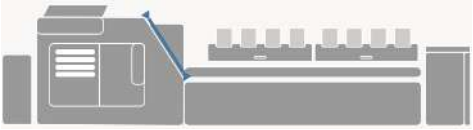


Figure 126: Pulley diameter W1 | Ramp tension (VRS)

This option is to be selected in accordance with the pulley that is used at the position W1.

The ramp tension gets affected by changing the pulley W1 (*refer to* ▸ *323*). This tension must be set as low as possible without the slivers becoming loose on the ramp.

Pulley diameter W2 | Feed tension (VE)

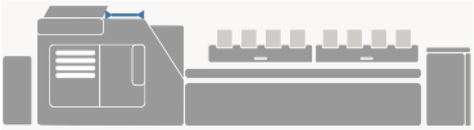
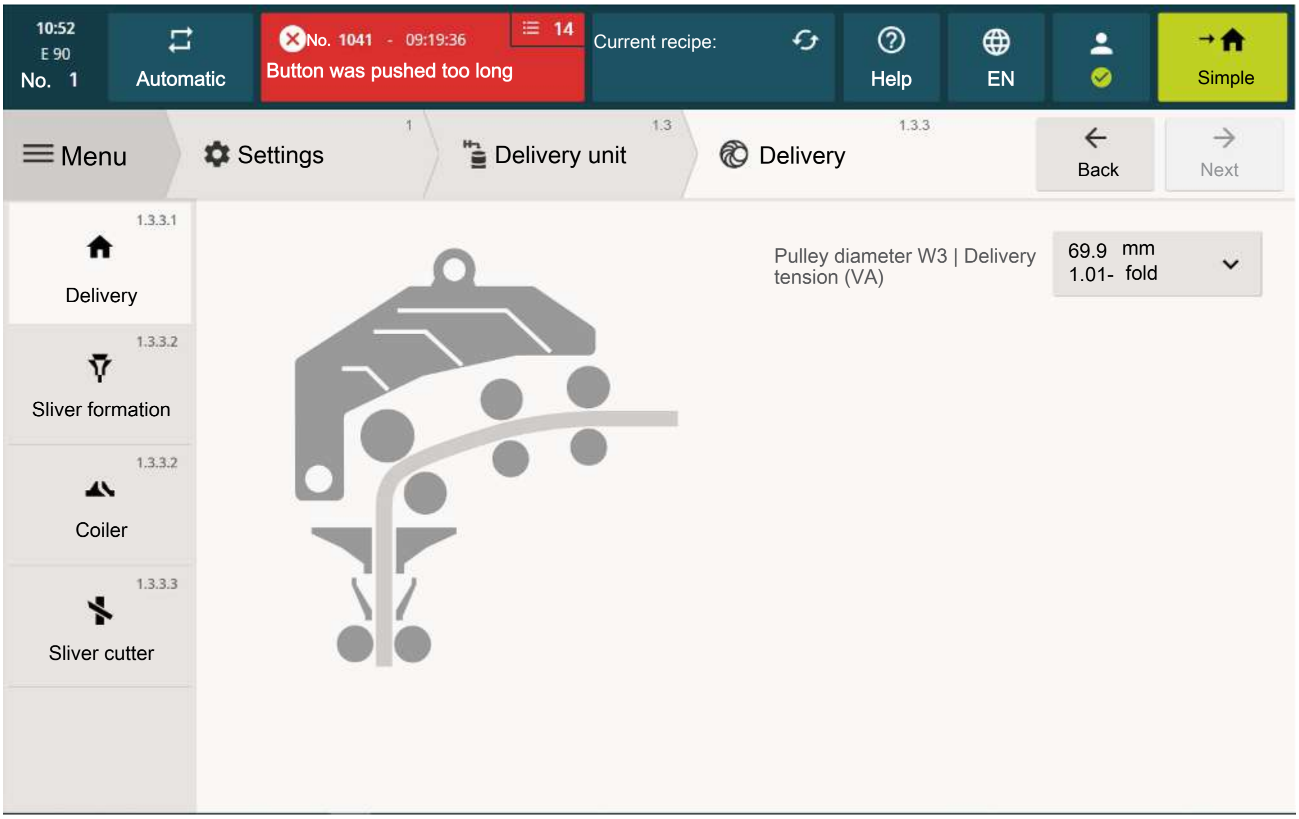


Figure 127: Pulley diameter W2 | Feed tension (VE)

This option is to be selected in accordance with the pulley that is used at the position W2.

The entrance tension becomes changed if the pulley at the position W2 is changed (*refer to* ▸ *325*). The entrance tension must be as low as possible, without loosening the slivers too much.

7.3.4.4 Data Screen 1.3.3.1 Delivery


10:52
E 90
No. 1
Automatic
14
Current recipe:
Help
EN
Simple
Menu
Settings
1
Delivery unit
1.3
Delivery
1.3.3
Back
Next
1.3.3.1
Delivery
1.3.3.2
Sliver formation
1.3.3.2
Coiler
1.3.3.3
Sliver cutter

No. 1041 - 09:19:36
Button was pushed too long

Pulley diameter W3 | Delivery tension (VA): 69.9 mm 1.01- fold

Figure 128: Data screen 1.3.3.1 Delivery

Pulley diameter W3 | Delivery tension (VA)

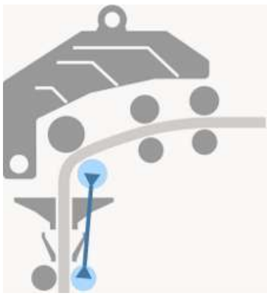
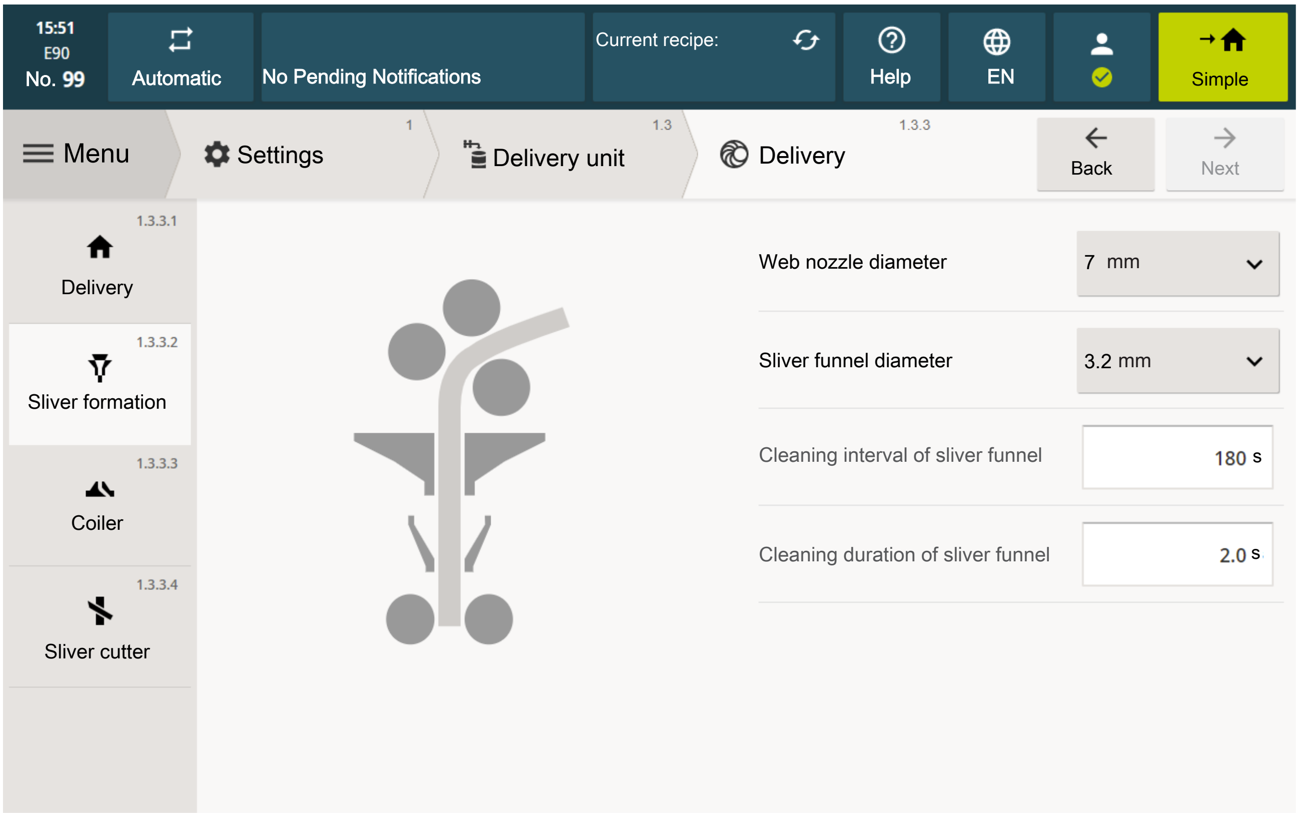


Figure 129: Pulley diameter W3 | Delivery tension (VA)

This option is to be selected in accordance with the pulley that is used at the position W3 of the delivery unit.

The delivery tension can be set if the pulley at the position W3 is changed (*refer to* ▸ *326*).

7.3.4.5 Data Screen 1.3.3.2 Sliver Formation


15:51
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.3
Delivery unit
1.3.3
Delivery
Back
Next
1.3.3.1
Delivery
1.3.3.2
Sliver formation
1.3.3.3
Coiler
1.3.3.4
Sliver cutter

Web nozzle diameter: 7 mm

Sliver funnel diameter: 3.2 mm

Cleaning interval of sliver funnel: 180 s

Cleaning duration of sliver funnel: 2.0 s

Figure 130: Data screen 1.3.3.2 Sliver formation

Web nozzle diameter

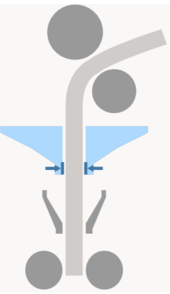


Figure 131: Web nozzle diameter

This option is to be selected in accordance with the web nozzle which is currently installed.

The web nozzle is to be selected in accordance with the sliver weight (*refer to ▸ 346*).

Sliver funnel diameter

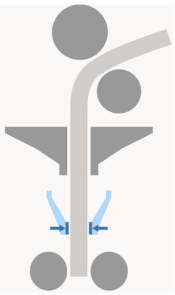


Figure 132: Sliver funnel diameter

This option is to be selected in accordance with the sliver funnel which is currently installed.

The sliver funnel is to be selected in accordance with the sliver weight (*refer to ▸ 348*).

Cleaning interval of sliver funnel

The interval when the sliver funnel is to be cleaned by the blowing air can be set in the field.

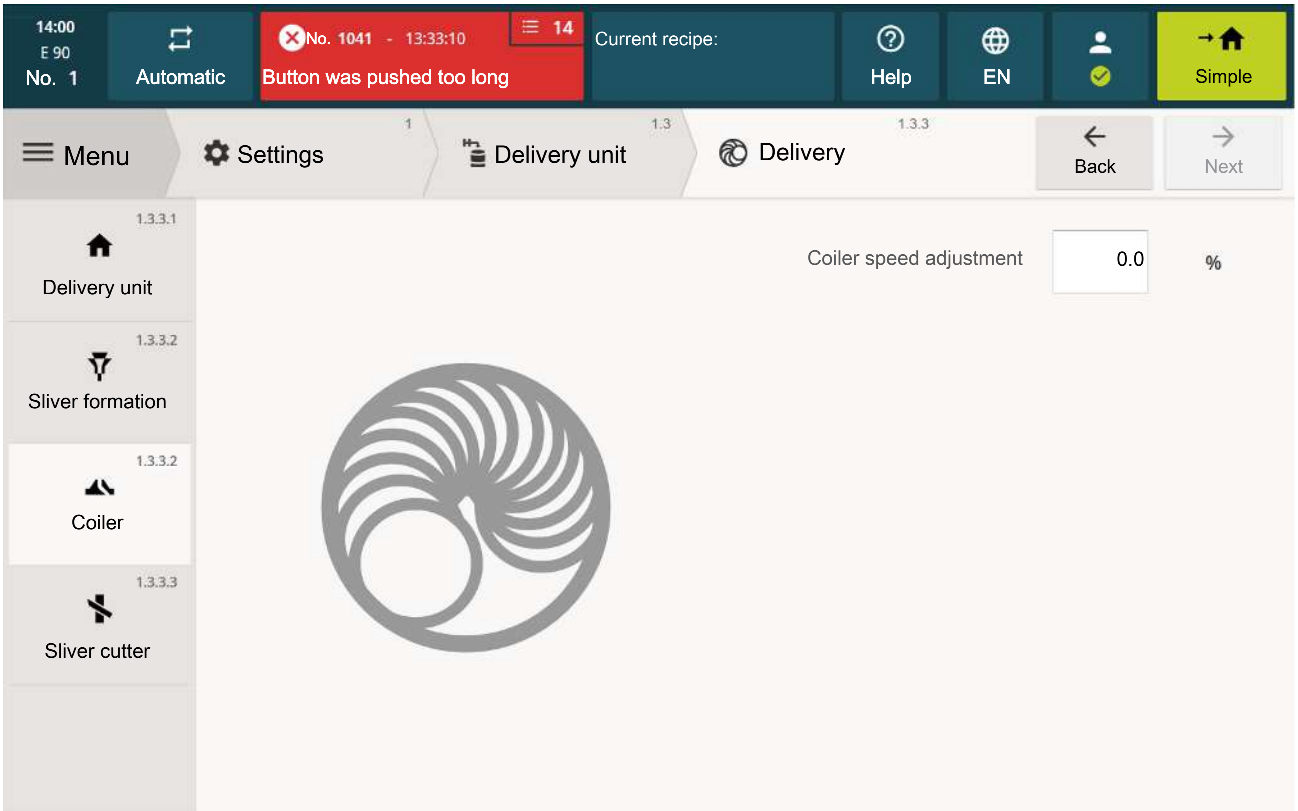
If the sliver continues to contain impurities with the default value, the cleaning interval must be decreased.

Cleaning duration of sliver funnel

The time how long the web nozzle is cleaned with the blowing air can be set in this field.

If the sliver continues to contain impurities with the default value, the cleaning duration must be increased.

7.3.4.6 Data Screen 1.3.3.3 Coiler


14:00
E 90
No. 1
Automatic
14
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.3
Delivery unit
1.3.3
Delivery
Back
Next
1.3.3.1
Delivery unit
1.3.3.2
Sliver formation
1.3.3.2
Coiler
1.3.3.3
Sliver cutter

No. 1041 - 13:33:10
Button was pushed too long

Coiler speed adjustment 0.0 %

Figure 133: Data screen 1.3.3.3 Coiler

Coiler speed adjustment

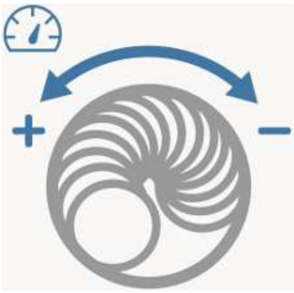
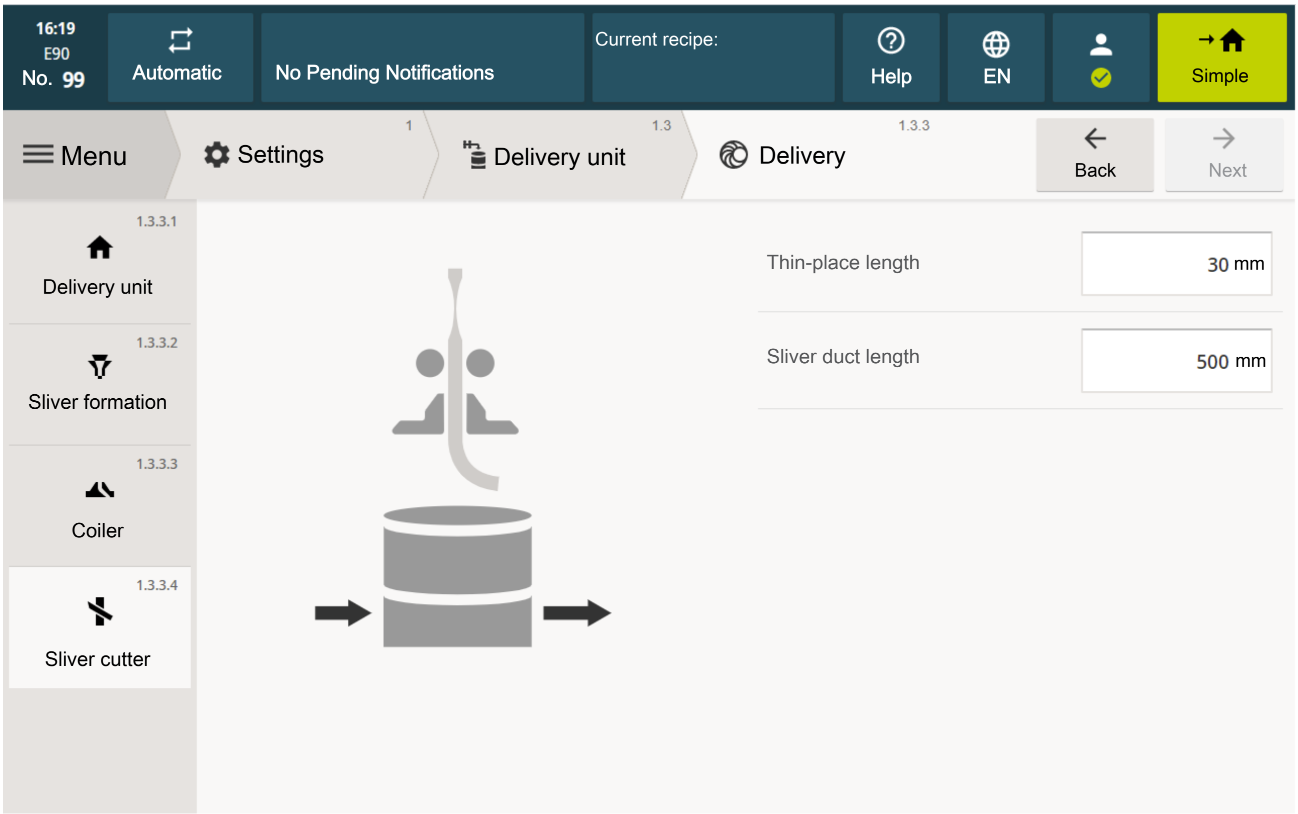


Figure 134: Coiler speed adjustment

The speed difference between the coiler and the sliver draw-off can be set in this field.

The speed difference has an effect on the quality of the sliver coiling in the can (*refer to* ▸ *389*).

7.3.4.7 Data Screen 1.3.3.4 Sliver Cutter


16:19
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Settings
1
Delivery unit
1.3
Delivery
1.3.3
Back
Next
1.3.3.1
Delivery unit
1.3.3.2
Sliver formation
1.3.3.3
Coiler
1.3.3.4
Sliver cutter

Thin-place length 30 mm

Sliver duct length 500 mm

Figure 135: Data screen 1.3.3.4 Sliver cutter

Thin-place length

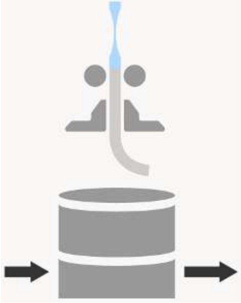


Figure 136: Thin-place length

The length of the thin place can be set in this field. The longer the fiber length, the longer the thin place length.

If the sliver is not teared off at can change, increase this value.

If there are frequent blockages in sliver funnel after can change, decrease this value. Thin place in this case is too big and has already broken before it goes to the sliver funnel.

Sliver duct length

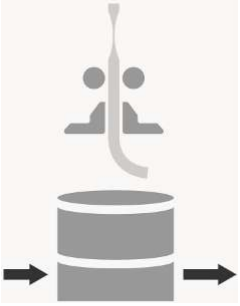
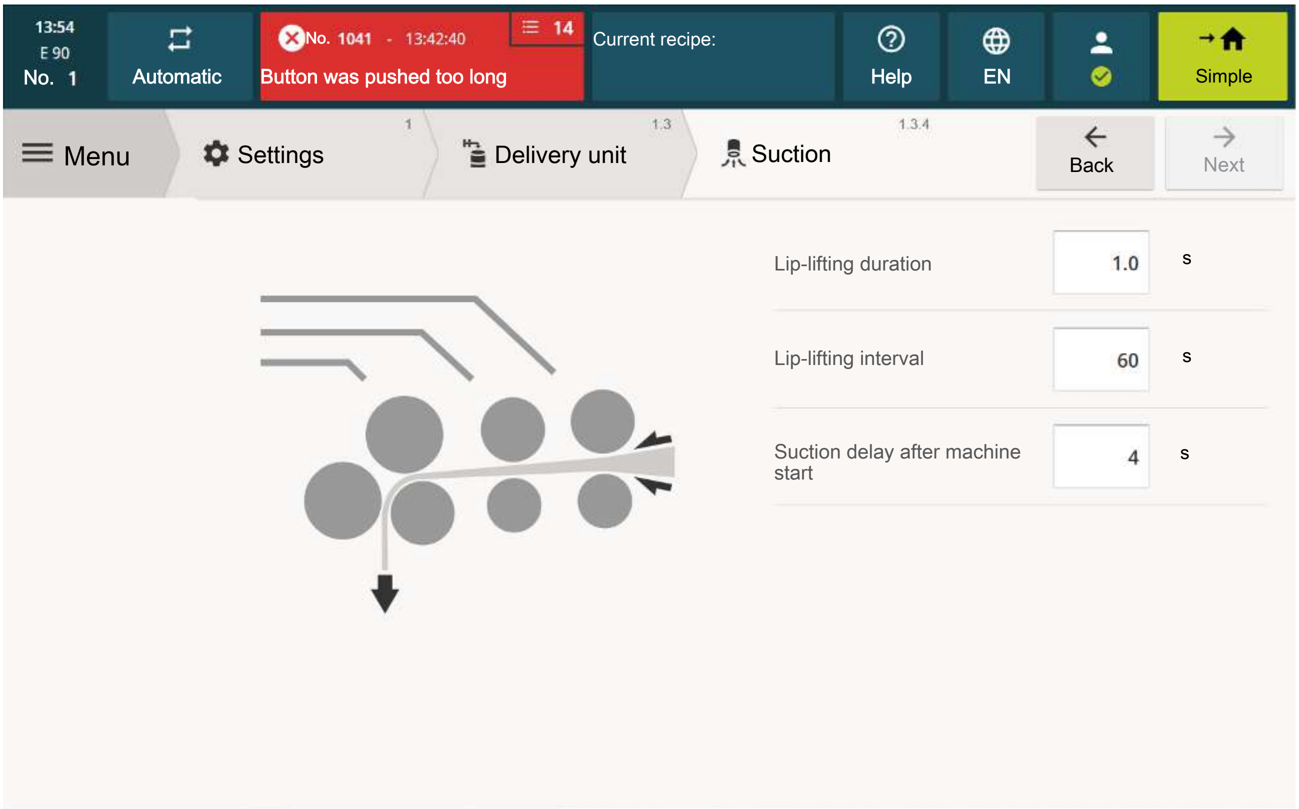


Figure 137: Sliver duct length

The sliver duct length is to be entered into this field in accordance with the sliver duct that is used at the machine.

The thin place is to be moved out of the end of the sliver duct for approximately 5 – 10 cm before the can becomes changed.

7.3.4.8 Data Screen 1.3.4 Suction



13:54
E 90
No. 1
Automatic
14
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.3
Delivery unit
1.3.4
Suction
Back
Next

No. 1041 - 13:42:40
Button was pushed too long

Lip-lifting duration 1.0 s

Lip-lifting interval 60 s

Suction delay after machine start 4 s

Figure 138: Data screen 1.3.4 Suction

Lip-lifting duration

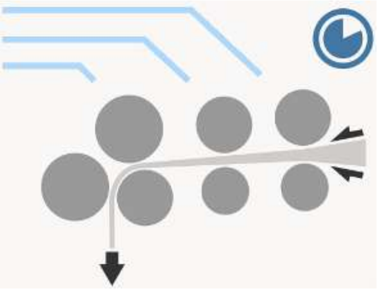


Figure 139: Lip-lifting duration

The time how long the top clearer lifts can be set in this field.

To release fibers which are pinched between top clearer and top rollers. The top clearer lifts off for the preset duration.

Lip-lifting interval

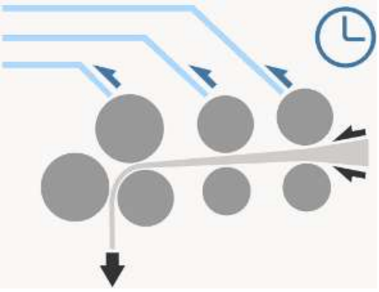


Figure 140: Lip-lifting interval

The user can set the lift-off interval of the top clearer in this field.

The interval when the top clearer lifts is to be changed in accordance with the time that is entered into this field.

Suction delay after machine start

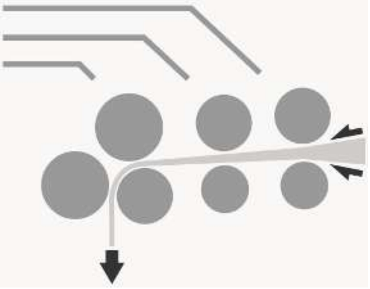
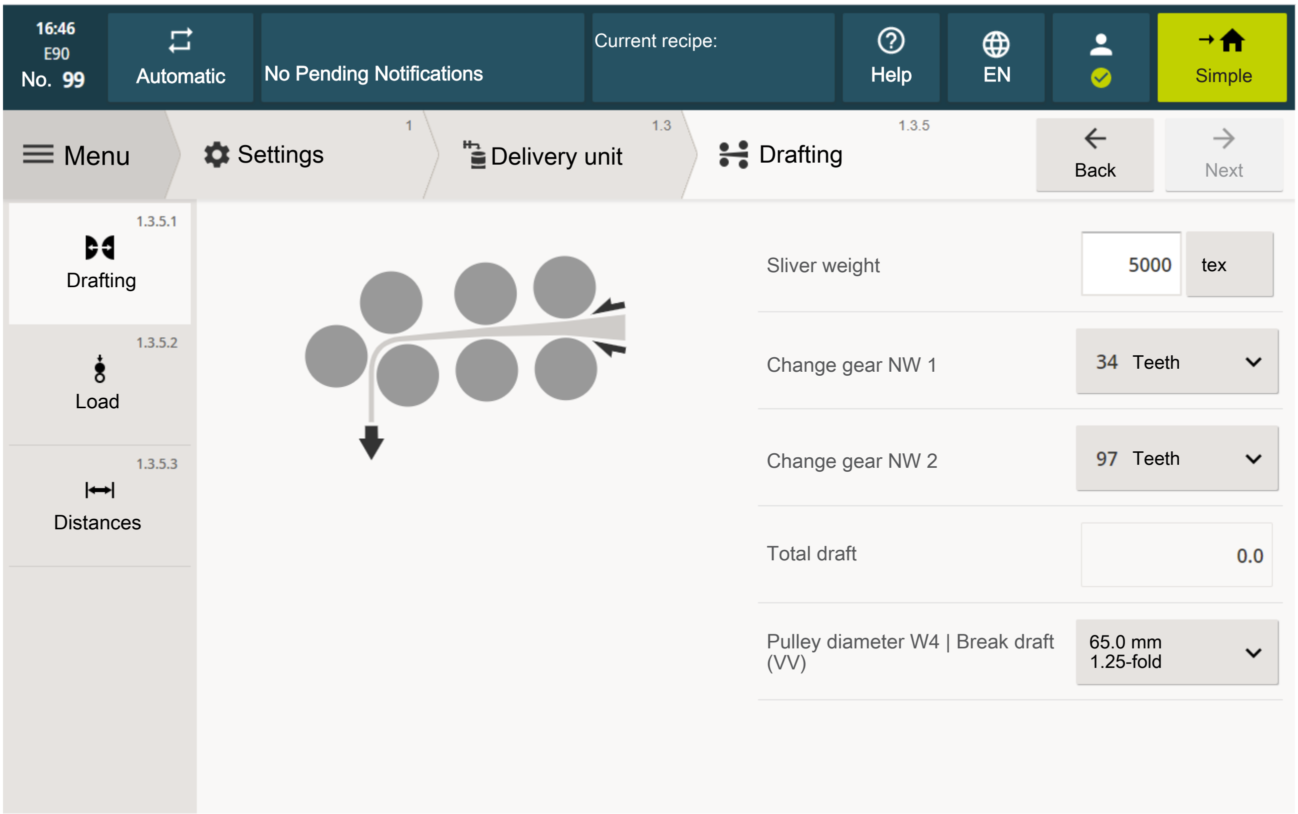


Figure 141: Suction delay after machine start

The time how long the opening of the suction duct is delayed after the machine start can be set in this field.

To make sure that the web goes smoothly from the drafting system to the sliver duct when machine starts, a suction delay of some seconds is necessary.

7.3.4.9 Data Screen 1.3.5.1 Drafting


16:46
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.3
Delivery unit
1.3.5
Drafting
Back
Next
1.3.5.1
Drafting
1.3.5.2
Load
1.3.5.3
Distances

Sliver weight	5000 tex
Change gear NW 1	34 Teeth
Change gear NW 2	97 Teeth
Total draft	0.0
Pulley diameter W4 | Break draft (VV)	65.0 mm 1.25-fold

Figure 142: Data screen 1.3.5.1 Drafting

Sliver weight

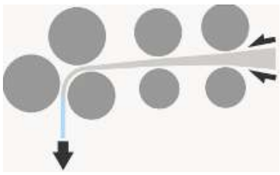


Figure 143: Sliver weight

This is the target sliver weight that must be produced in the end. The main draft must be set so that the actual sliver weight is the same as the target sliver weight (*refer to* ▸ *327*).

Change gear NW 1

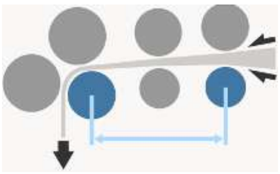


Figure 144: Change gear NW 1

The teeth number of the pulley is to be entered into this field in accordance with the pulley that is used at the position NW1 of the delivery unit.

Change gear NW 2

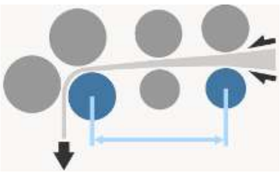


Figure 145: Change gear NW 2

The teeth number of the pulley is to be entered into this field in accordance with the pulley that is used at the position NW2 of the delivery unit.

Total draft

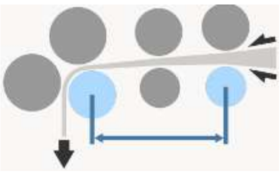


Figure 146: Total draft

The total draft becomes changed if the change pulleys NW 1 and NW 2 are changed (*refer to* ▸ *329*).

Pulley diameter W4 | Break draft (VV)

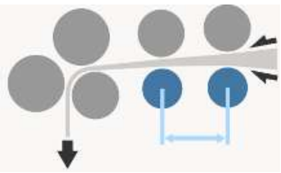
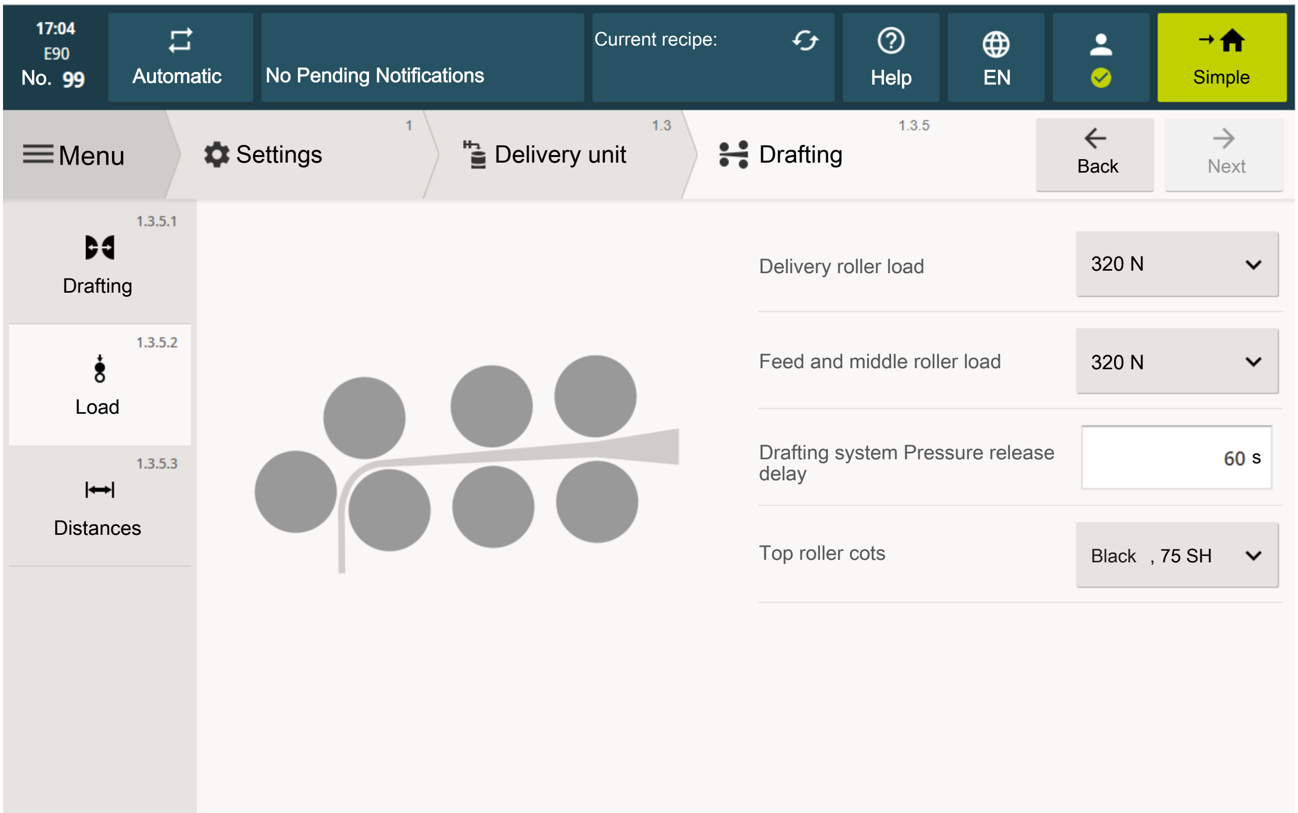


Figure 147: Pulley diameter W4 / break draft (VV)

The option is to be selected in accordance with the pulley that is used at the position W4 of the delivery unit (*refer to* ▸ *331*).

The break draft becomes changed if the pulley at position W4 is changed (*refer to* ▸ *331*).

7.3.4.10 Data Screen 1.3.5.2 Load


17:04
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.3
Delivery unit
1.3.5
Drafting
Back
Next
1.3.5.1
Drafting
1.3.5.2
Load
1.3.5.3
Distances

Delivery roller load: 320 N

Feed and middle roller load: 320 N

Drafting system Pressure release delay: 60 s

Top roller cots: Black , 75 SH

Figure 148: Data screen 1.3.5.2 Load

Delivery roller load

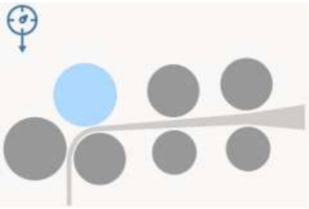


Figure 149: Delivery roller load

This load is to be selected in accordance with the delivery roller load that is mechanically set at the delivery unit (*refer to* ▸ *340*).

Feed and middle roller load

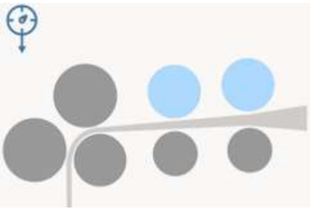


Figure 150: Feed and middle roller load

This load is to be selected in accordance with the feed roller load and middle roller load that is mechanically set at the delivery unit (*refer to ▸ 340*).

Drafting system Pressure release delay

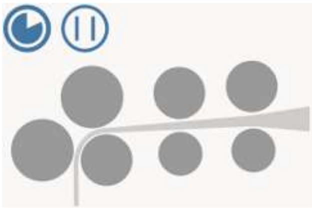


Figure 151: Drafting system pressure release delay

The time how long the load is released from the drafting system after the machine stops is to be changed in accordance the time that is entered into this field.

Top roller cots

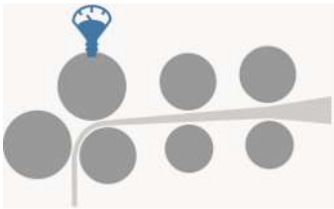
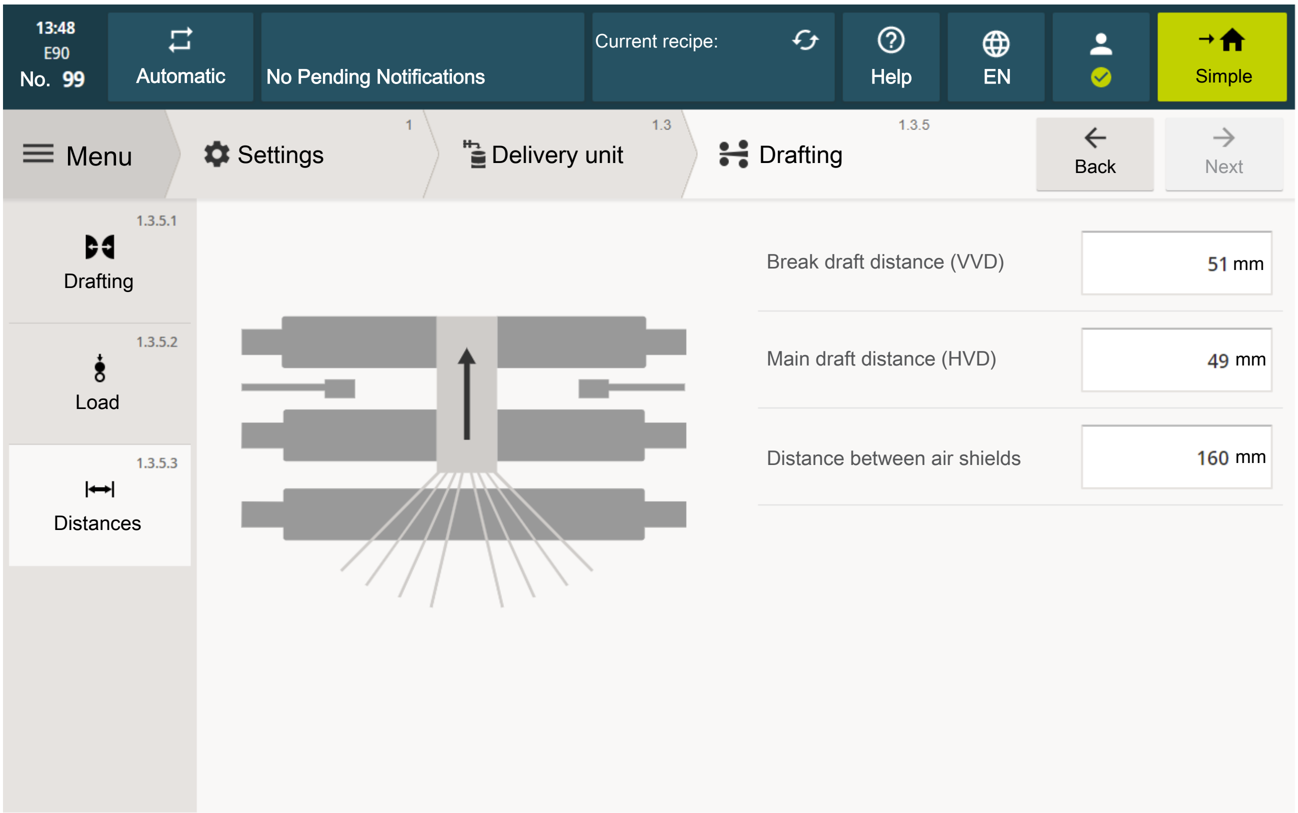


Figure 152: Top roller cots

It shows the information of the top roller cots.

7.3.4.11 Data Screen 1.3.5.3 Distances


13:48
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.3
Delivery unit
1.3.5
Drafting
Back
Next
1.3.5.1
Drafting
1.3.5.2
Load
1.3.5.3
Distances

Break draft distance (VVD) 51 mm

Main draft distance (HVD) 49 mm

Distance between air shields 160 mm

Figure 153: Data screen 1.3.5.3 Distances

Break draft distance (VVD)

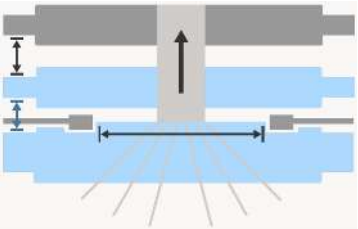


Figure 154: Break draft distance (VVD)

This distance is to be entered in accordance with the break draft distance that is set at the drafting system (*refer to* ▸ *336*).

Main draft distance (HVD)

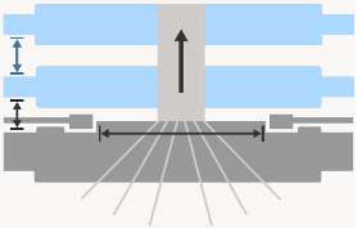


Figure 155: Main draft distance (HVD)

This distance is to be entered in accordance with the main draft distance that is set at the drafting system (*refer to* ▸ *334*).

Distance between air shields

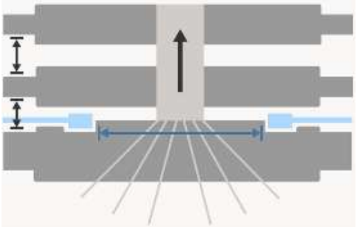
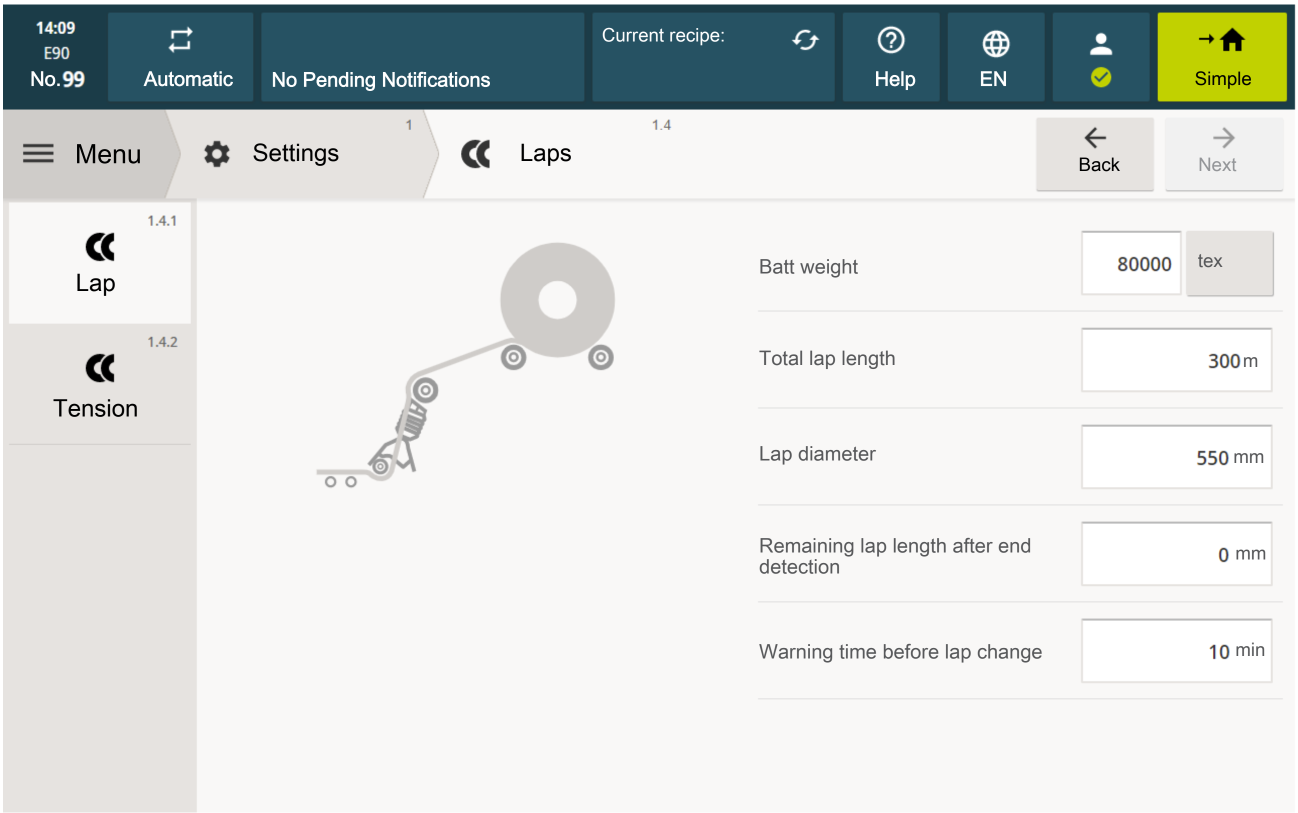


Figure 156: Distance between air shields

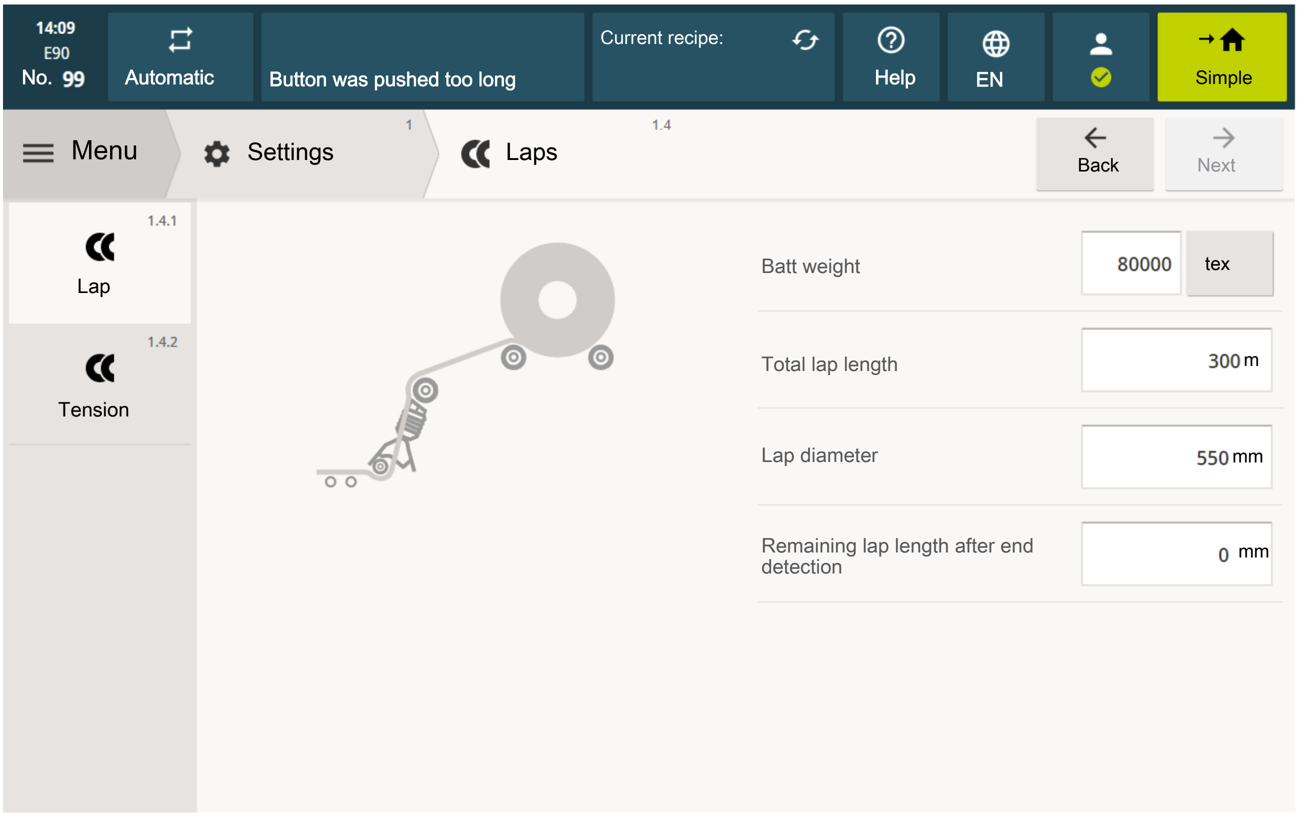
This distance is to be entered in accordance with the distance between the 2 air shields that is set at the drafting system (*refer to* ▸ *341*).

7.3.4.12 Data Screen 1.4.1 Lap


14:09
E90
No.99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Settings
1
Laps
1.4
Back
Next
1.4.1
Lap
1.4.2
Tension

Batt weight	80000 tex
Total lap length	300 m
Lap diameter	550 mm
Remaining lap length after end detection	0 mm
Warning time before lap change	10 min

Figure 157: Data screen1.4.1 Lap (without ROBOlap)


14:09
E90
No. 99
Automatic
Button was pushed too long
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.4
Laps
Back
Next
1.4.1
Lap
1.4.2
Tension

Batt weight	80000	tex
Total lap length	300	m
Lap diameter	550	mm
Remaining lap length after end detection	0	mm

Figure 158: Data screen 1.4.1 Lap (with ROBOlap)

Batt weight

Figure 159: Batt weight

The batt weight and unit are to be entered into this field in accordance with the used lap.

Total lap length

Figure 160: Total lap length

The length of the full lap is to be entered into this field in accordance with the used lap.

Lap diameter

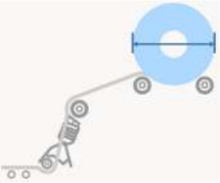


Figure 161: Lap diameter

The full lap diameter is to be entered into this field in accordance with the used lap. The lap diameter and the lap length are used to determine when a new lap can be put onto the lap table by SERVOlap.

Remaining lap length after end detection

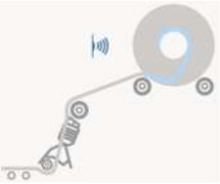


Figure 162: Remaining lap length after end detection

The machine continues operating for some time after a batt end is found. During this time, the length how long the batt stays treated can be set in this field.

Warning time before lap change (without ROBOlap)

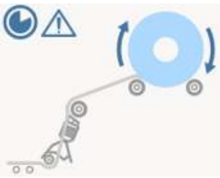
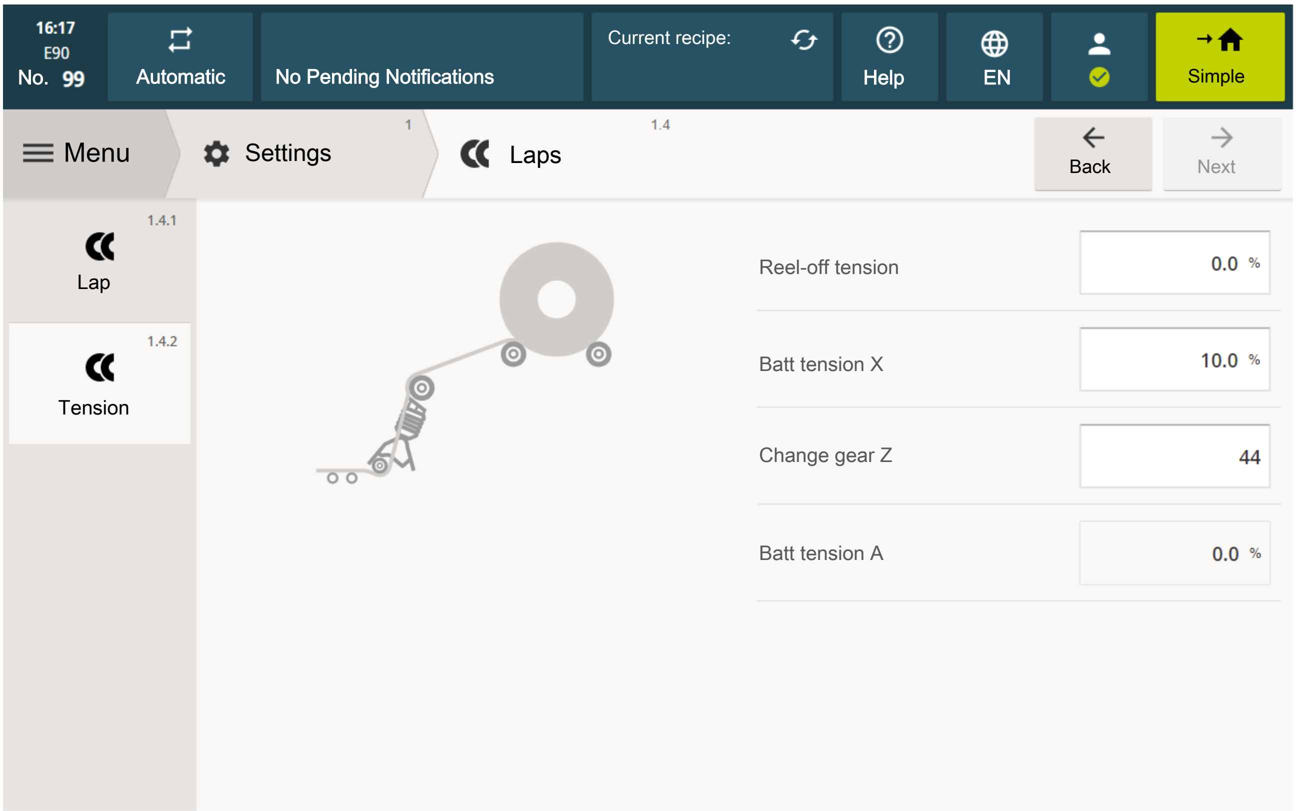


Figure 163: Warning time before lap change

A specified time before the batt is fully removed from the tube, a message can be shown on the data screen. This time can be set in this field.

7.3.4.13 Data Screen 1.4.2 Tension


16:17
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.4
Laps
Back
Next
1.4.1
Lap
1.4.2
Tension

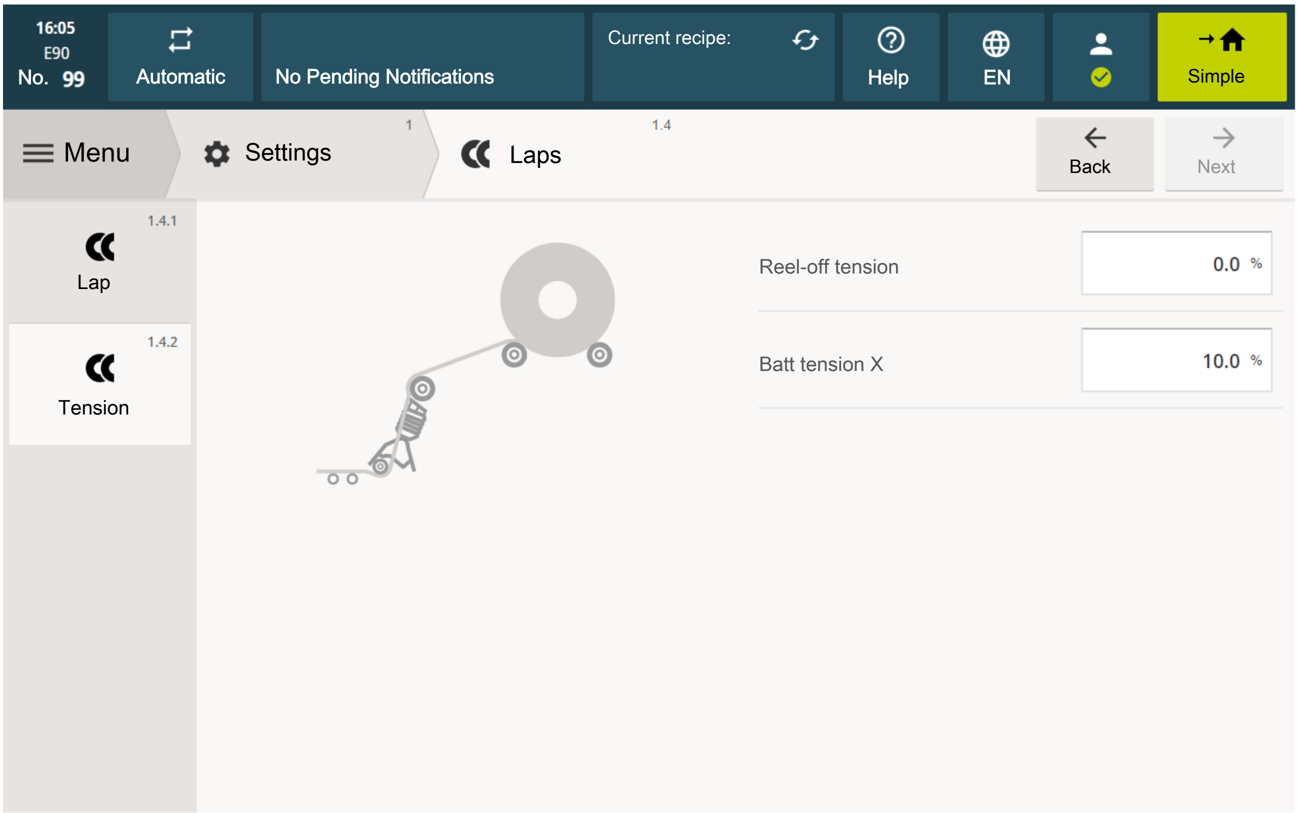
Reel-off tension 0.0 %

Batt tension X 10.0 %

Change gear Z 44

Batt tension A 0.0 %

Figure 164: Data screen 1.4.2 Tension (with ROBOlap)


16:05
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.4
Laps
Back
Next
1.4.1
Lap
1.4.2
Tension

Reel-off tension 0.0 %

Batt tension X 10.0 %

Figure 165: Data screen 1.4.2 Tension (without ROBOlap)

Reel-off tension

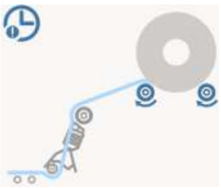


Figure 166: Reel-off tension

This parameter is used when the batt weight at the beginning of the lap is different from the batt weight at the end of the lap. (For example, if the batt weight is 101% at full lap length, and 99% at 0 m lap length, this value must be set to 2%.)

Batt tension X

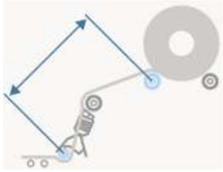


Figure 167: Batt tension X

The batt tension X is the tension between the lap roller and the feed cylinder of the nipper. The actual batt tension X is influenced by the reel-off tensioin to keep the combed sliver weight.

Change gear Z

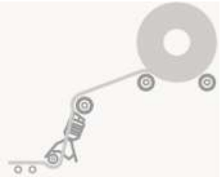


Figure 168: Change gear Z

This parameter defines the speed of the pressure roller in ROBOlap. It is only relevant when the pressure rollers are lowered.

The batt tension A can be set with changing the change gear Z. The total batt tension X must be distributed uniformly to the batt tension A and the batt tension B (*refer to ▸ 92*).

Batt tension A

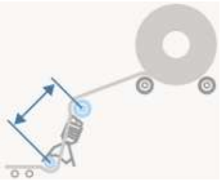
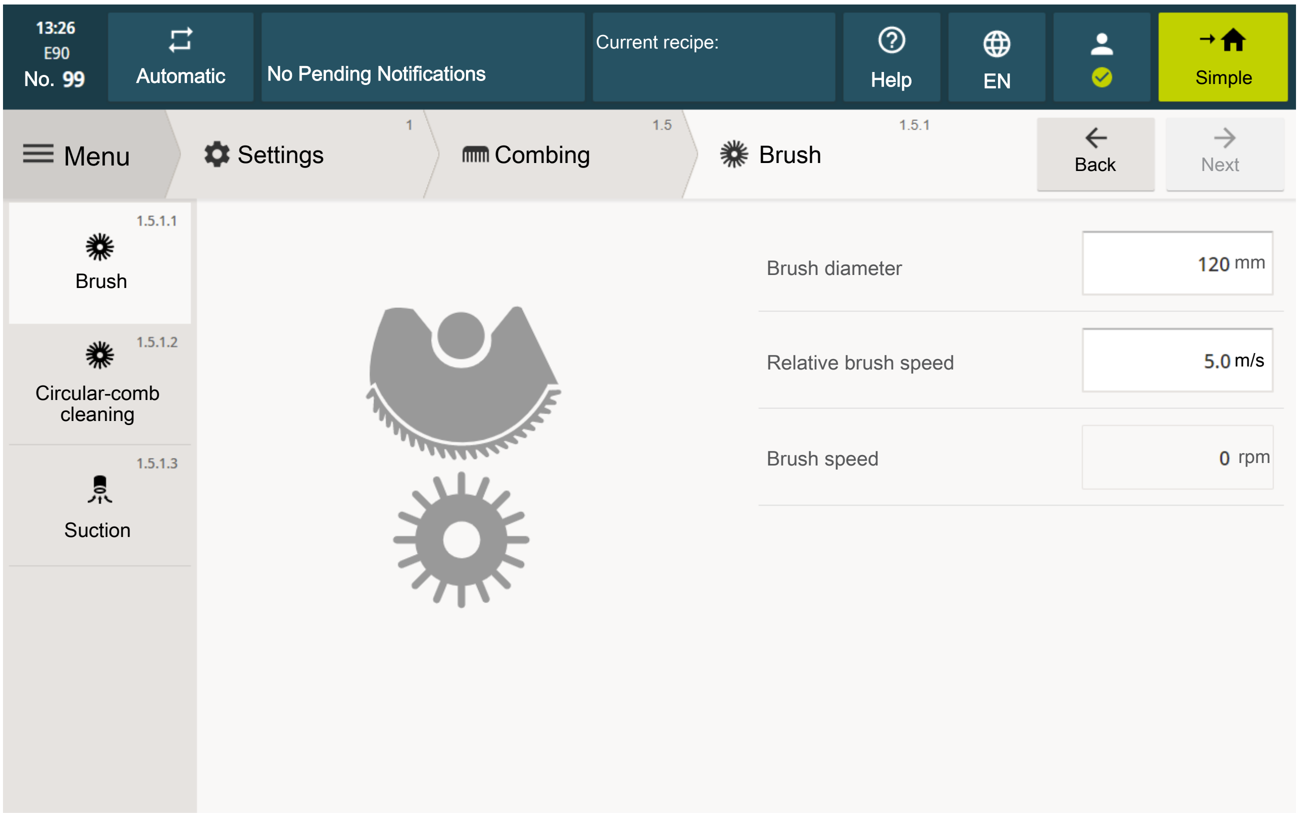


Figure 169: Batt tension A

This value is calculated from batt tension X and the change gear Z.

The batt tension A is the tension between the carrier roller and the feed cylinder. This tension can be set with the change gear Z which drives the carrier roller (*refer to ▸ 397*).

7.3.4.14 Data Screen 1.5.1.1 Brush


13:26
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.5
Combing
1.5.1
Brush
Back
Next
1.5.1.1
Brush
1.5.1.2
Circular-comb cleaning
1.5.1.3
Suction

Brush diameter 120 mm

Relative brush speed 5.0 m/s

Brush speed 0 rpm

Figure 170: Data screen 1.5.1.1 Brush

Brush diameter

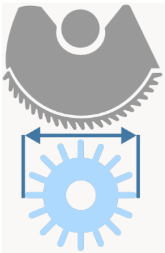


Figure 171: Brush diameter

The brush diameter is to be entered in this field (*refer to* ▸ *556*).

Relative brush speed

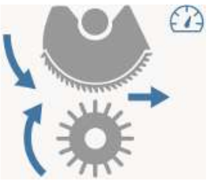


Figure 172: Relative brush speed

The relative brush speed is to be entered into this field.

The range and default values of the relative brush speed is as follows:

- Range: 3 – 10 m/sec
- Default: 5 m/sec

Brush speed

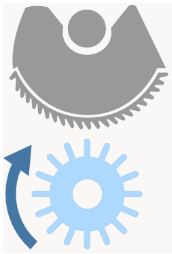
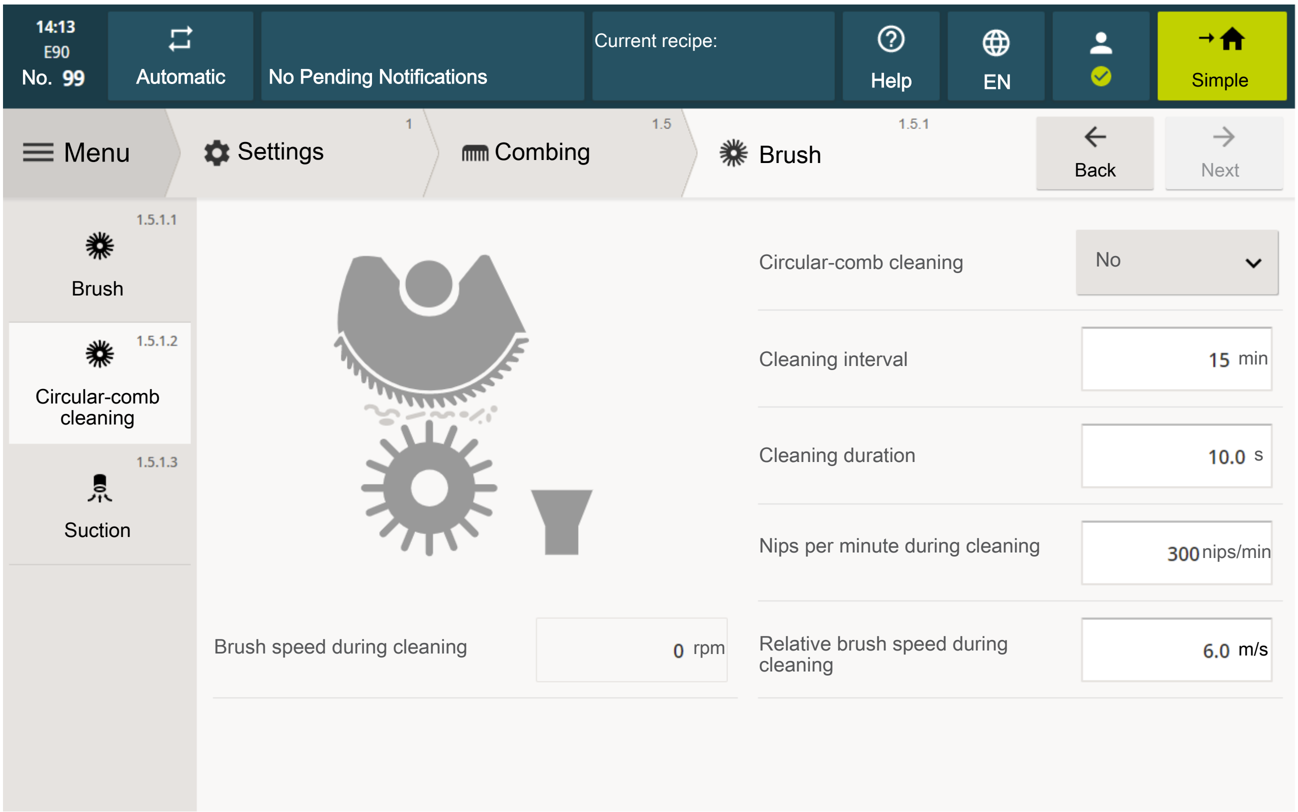


Figure 173: Brush speed

The brush speed is adapted automatically if the **Relative brush speed** and the **Brush diameter** are entered.

7.3.4.15 Data Screen 1.5.1.2 Circular-Comb Cleaning


14:13
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Settings
1
Combing
1.5
Brush
1.5.1
Back
Next
1.5.1.1
Brush
1.5.1.2
Circular-comb cleaning
1.5.1.3
Suction

Circular-comb cleaning: No
Cleaning interval: 15 min
Cleaning duration: 10.0 s
Nips per minute during cleaning: 300 nips/min
Brush speed during cleaning: 0 rpm
Relative brush speed during cleaning: 6.0 m/s

Figure 174: Data screen 1.5.1.2 Circular-comb cleaning

Circular-comb cleaning

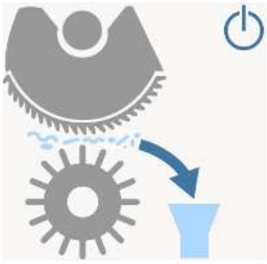


Figure 175: Circular-comb cleaning

If the circular comb need to be cleaned intensively during a specified interval, the option **Yes** is to be selected. If not, the option **No** is to be selected.

Cleaning interval

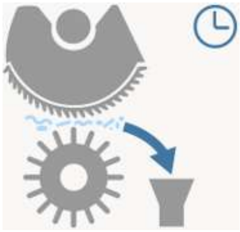


Figure 176: Cleaning interval

The interval when the circular comb is cleaned can be set in this field.

Cleaning duration

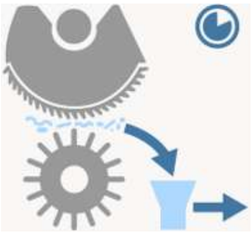


Figure 177: Cleaning duration

The time how long the brush cleans the circular comb can be set in this field.

Nips per minute during cleaning

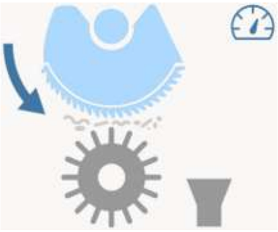


Figure 178: Nips per minute during cleaning

During the cleaning, the production speed can be set in this field.

Relative brush speed during cleaning

Figure 179: Relative brush speed during cleaning

During the cleaning, the relative speed between the circular comb and the brush can be set in this field.

Brush speed during cleaning

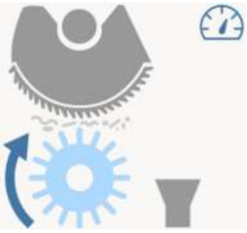


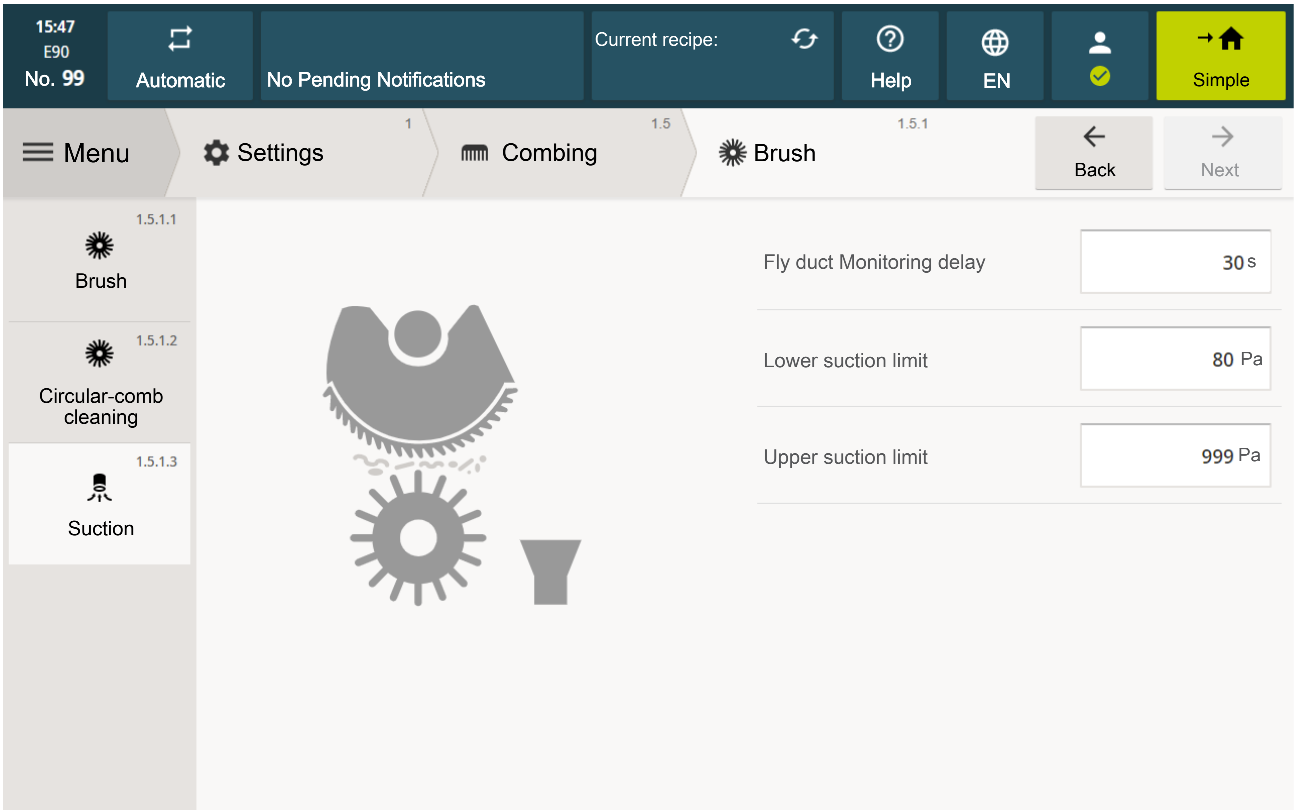
Figure 180: Brush speed during cleaning

This brush speed is adapted automatically if the 2 parameters that follow are entered:

– **Relative brush speed during cleaning**

– **Nips per minute during cleaning**

7.3.4.16 Data Screen 1.5.1.3 Suction


15:47
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.5
Combing
1.5.1
Brush
Back
Next
1.5.1.1
Brush
1.5.1.2
Circular-comb cleaning
1.5.1.3
Suction

Fly duct Monitoring delay 30 s
Lower suction limit 80 Pa
Upper suction limit 999 Pa

Figure 181: Data screen 1.5.1.3 Suction

Fly duct Monitoring delay

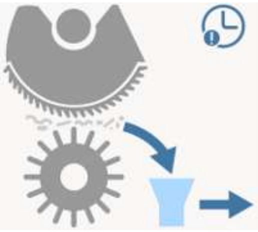


Figure 182: Fly duct monitoring delay

The fly ducts are monitored by a light barrier. If the light barrier gets blocked, an error message is shown after a delay. This delay time can be set in this field.

Lower suction limit

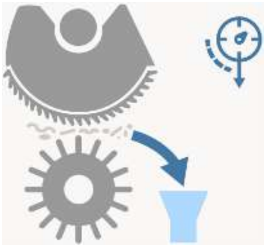


Figure 183: Lower suction limit

The lower suction limit for monitoring the suction can be set in this field. If the suction is lower than this value, the fault message **1032 Vacuum in suction duct is low** is shown.

Upper suction limit

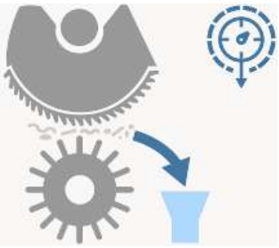
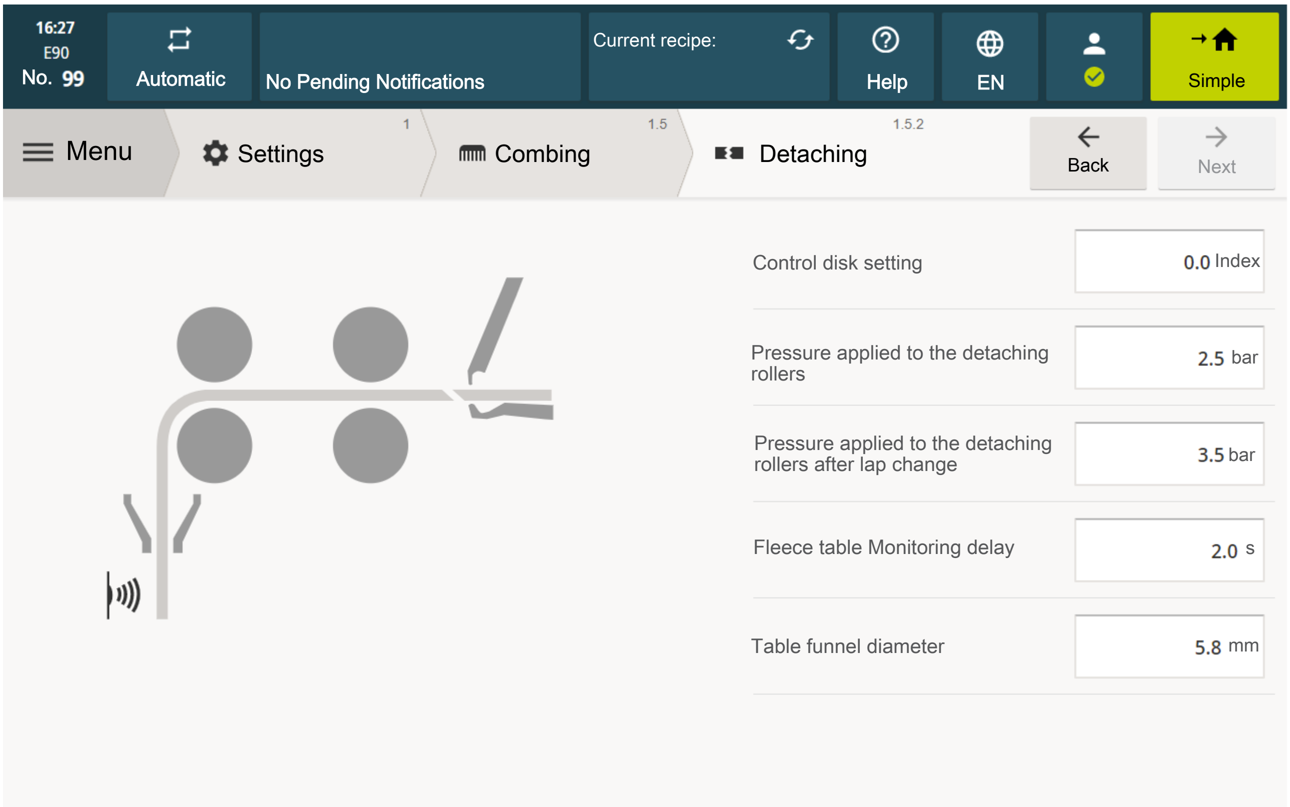


Figure 184: Upper suction limit

The upper suction limit for monitoring the suction can be set in this field. If the suction is higher than this value, the fault message **1046 Vacuum in suction duct is high** is shown.

7.3.4.17 Data Screen 1.5.2 Detaching


16:27
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.5
Combing
1.5.2
Detaching
Back
Next

Control disk setting 0.0 Index

Pressure applied to the detaching rollers 2.5 bar

Pressure applied to the detaching rollers after lap change 3.5 bar

Fleece table Monitoring delay 2.0 s

Table funnel diameter 5.8 mm

Figure 185: Data Screen 1.5.2 Detaching

Control disk setting

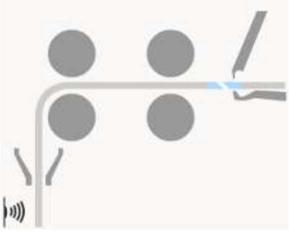


Figure 186: Control disk settings

The set mark of the control disk can be set in this field.

This field is to be entered in accordance with the scale of the control disk that is set at the head stock.

Pressure applied to the detaching rollers

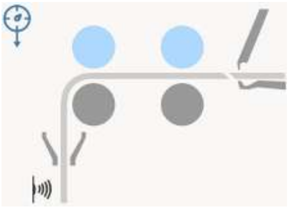


Figure 187: Pressure applied to the detaching rollers

The pressure that is applied to the detaching rollers can be set in this field.

Pressure applied to the detaching rollers after lap change

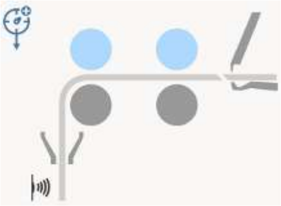


Figure 188: Pressure applied to the detaching rollers after lap change

The pressure of detaching rollers need to be increased to get the thick place of lap piecing through the combing position. This pressure is suggested to be set 1 bar more than the value in the field **Pressure applied to the detaching rollers**.

Fleece table Monitoring delay

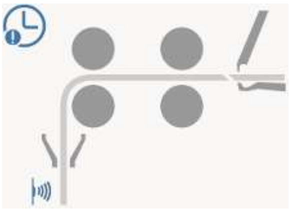


Figure 189: Fleece table monitoring delay

This delay is the time after how long the machine can stop when an error of a table funnel is detected.

Table funnel diameter

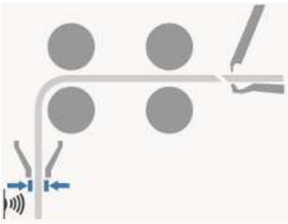
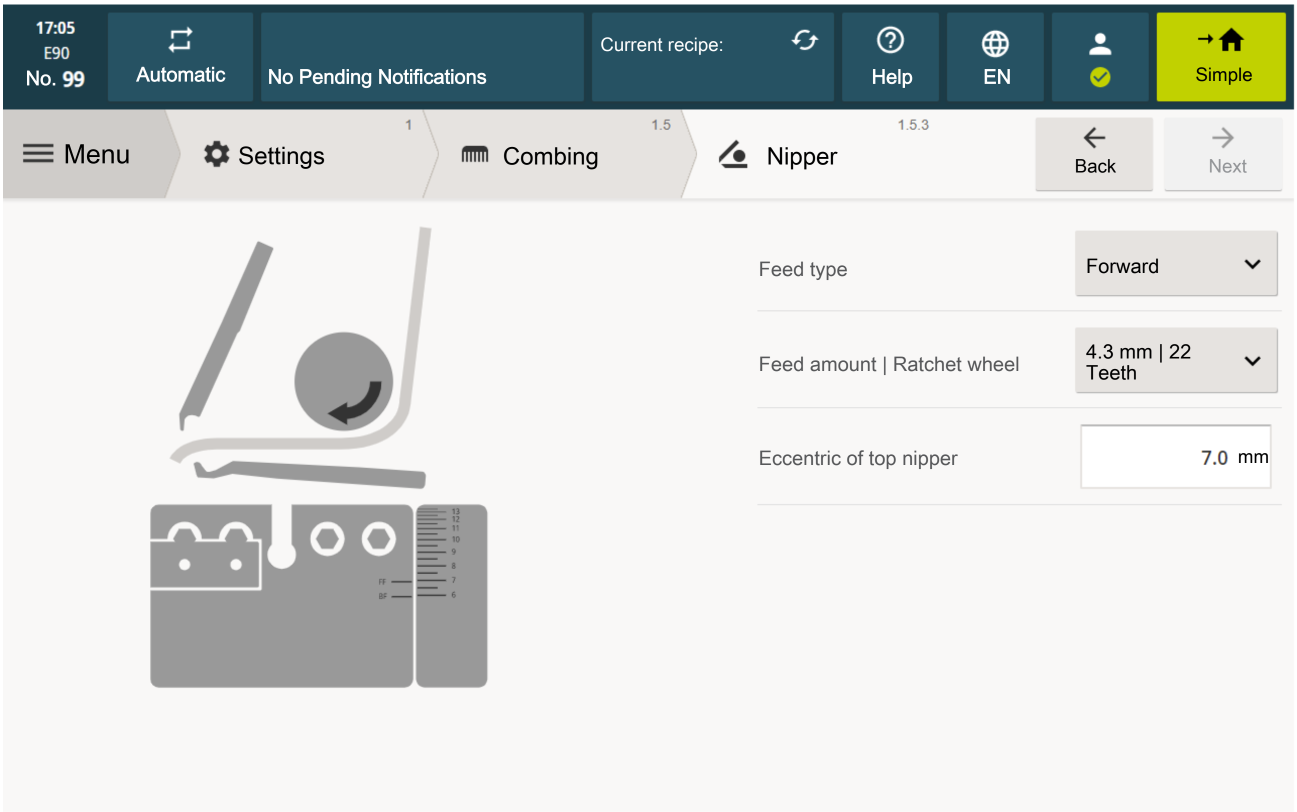


Figure 190: Table funnel diameter

This field is to be entered in accordance with the table funnel that is used at the machine.

7.3.4.18 Data Screen 1.5.3 Nipper


17:05
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.5
Combing
1.5.3
Nipper
Back
Next

Feed type: Forward

Feed amount | Ratchet wheel: 4.3 mm | 22 Teeth

Eccentric of top nipper: 7.0 mm

Figure 191: Data screen 1.5.3 Nipper

Feed type

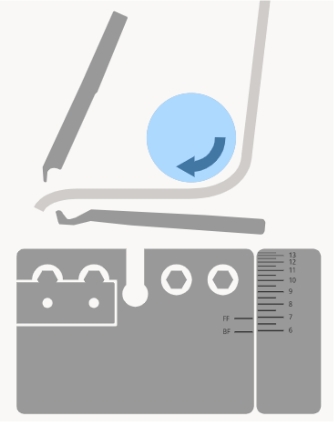


Figure 192: Feed type

This option is to be selected in accordance with the feed type that the machine has.

The feed type is to be selected in accordance with the detaching distance and the noil percentage (*refer to* ▸ *307*). The feed type can be changed if the feeding pawls are changed (*refer to* ▸ *308*).

Feed amount | Ratchet wheel

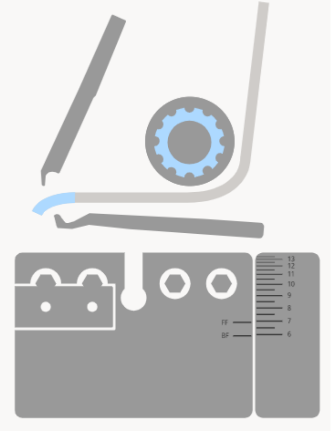


Figure 193: Feed amount | Ratchet wheel

This option is to be selected in accordance with the ratchet wheels that are used at the machine.

The ratchet wheels are to be selected in accordance with the feed amount that is required. And the feed amount is to be selected in accordance with the staple length (*refer to* ▸ *90*).

Eccentric of top nipper

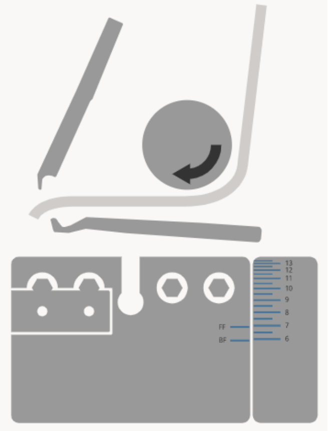
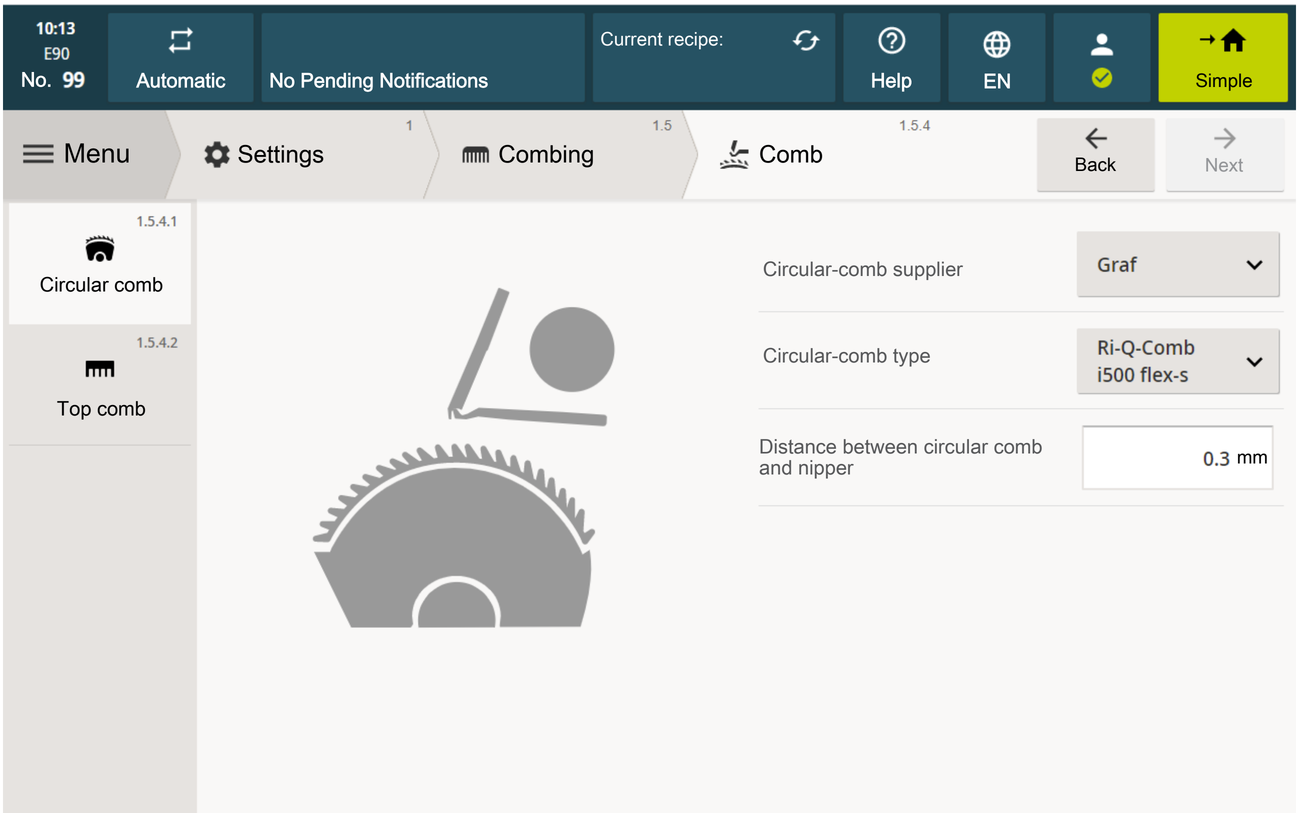

13
12
11
10
9
8
7
6
FF
BF

Figure 194: Eccentric of top nipper

This field is to be entered in accordance with the detaching distance that is set at the head stock (*refer to* ▸ *311*).

If the detaching distance is changed, the eccentric shaft must be changed accordingly (*refer to* ▸ *313*).

7.3.4.19 Data Screen 1.5.4.1 Circular Comb


10:13
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.5
Combing
1.5.4
Comb
Back
Next
1.5.4.1
Circular comb
1.5.4.2
Top comb

Circular-comb supplier: Graf

Circular-comb type: Ri-Q-Comb i500 flex-s

Distance between circular comb and nipper: 0.3 mm

Figure 195: Data screen 1.5.4.1 Circular comb

Circular-comb supplier

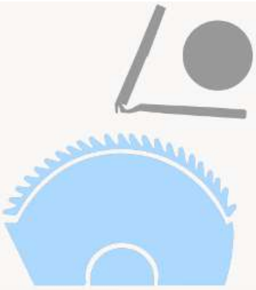


Figure 196: Circular-comb supplier

This filed shows the supplier of the circular comb.

Circular-comb type

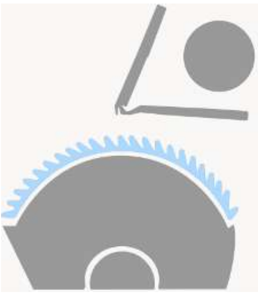


Figure 197: Circular-comb type

This option is to be selected in accordance with the circular comb which is currently installed.

The circular comb type must be selected in accordance with the staple length of the raw material and the required noil percentage (*refer to* ▸ *307*).

Distance between circular comb and nipper

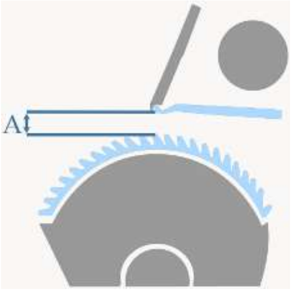
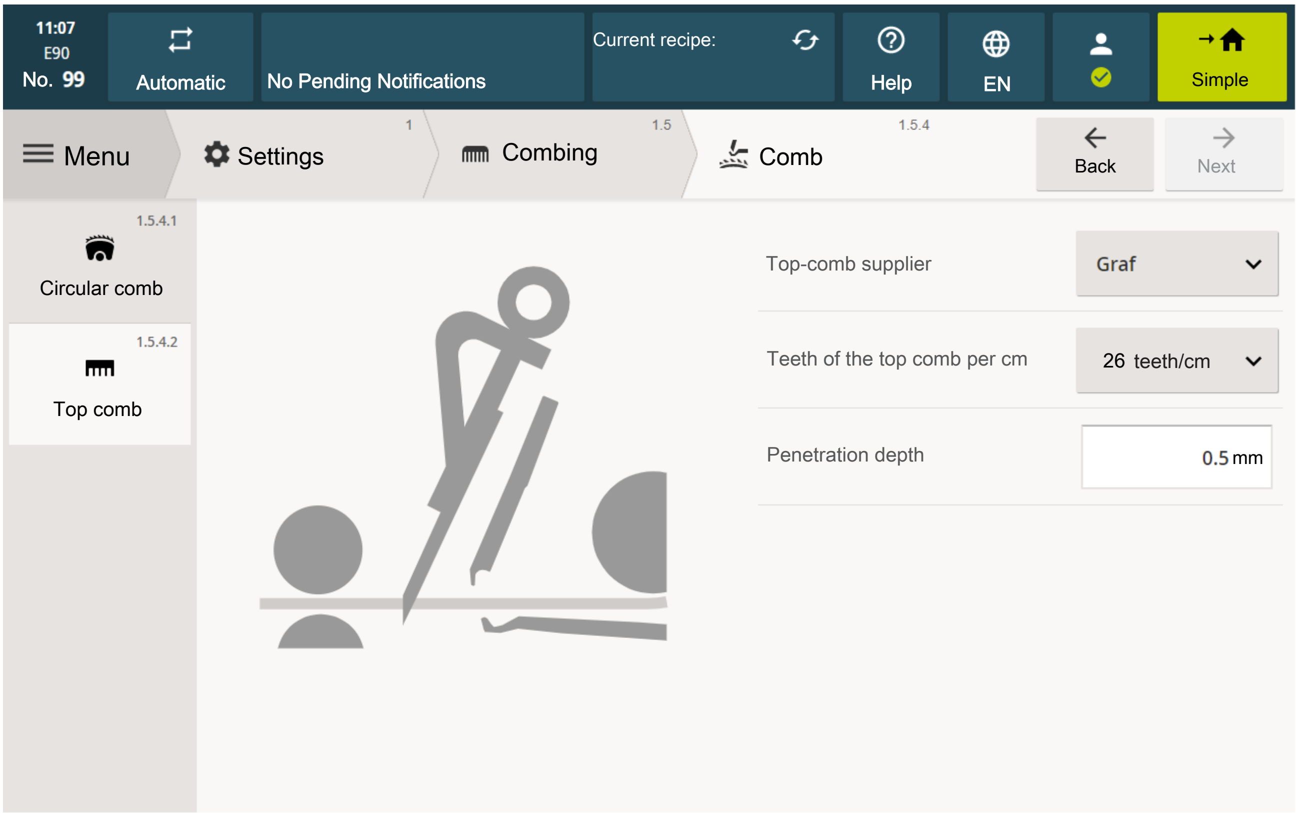


Figure 198: Combing distance (A)

The **Distance between circular comb and nipper** is to be entered in accordance with the distance between the nipper and the circular comb that is set at the machine.

This distance can be changed if the number of the spacer disks is changed (*refer to* ▸ *380*).

7.3.4.20 Data Screen 1.5.4.2 Top Comb


11:07
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.5
Combing
1.5.4
Comb
Back
Next
1.5.4.1
Circular comb
1.5.4.2
Top comb

Top-comb supplier: Graf

Teeth of the top comb per cm: 26 teeth/cm

Penetration depth: 0.5 mm

Figure 199: Data screen 1.5.4.2 Top comb

Top-comb supplier

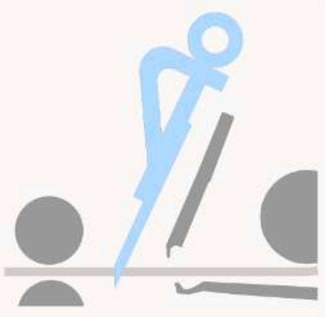


Figure 200: Top comb supplier

This field show the supplier of top comb.

Teeth of the top comb per cm

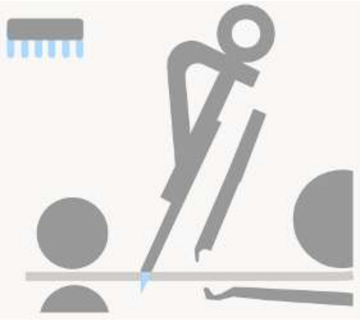


Figure 201: Teeth of the top comb per cm

This tooth number of top comb is to be selected in accordance with top combs which is currently installed.

Top combs must be selected in accordance with the staple length of the raw material and the noil percentage (*refer to* ▸ *315*).

Penetration depth

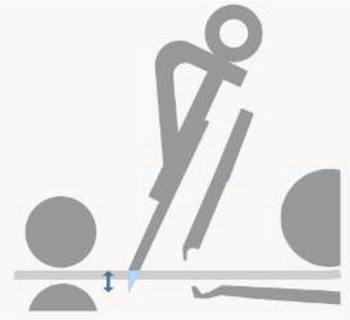
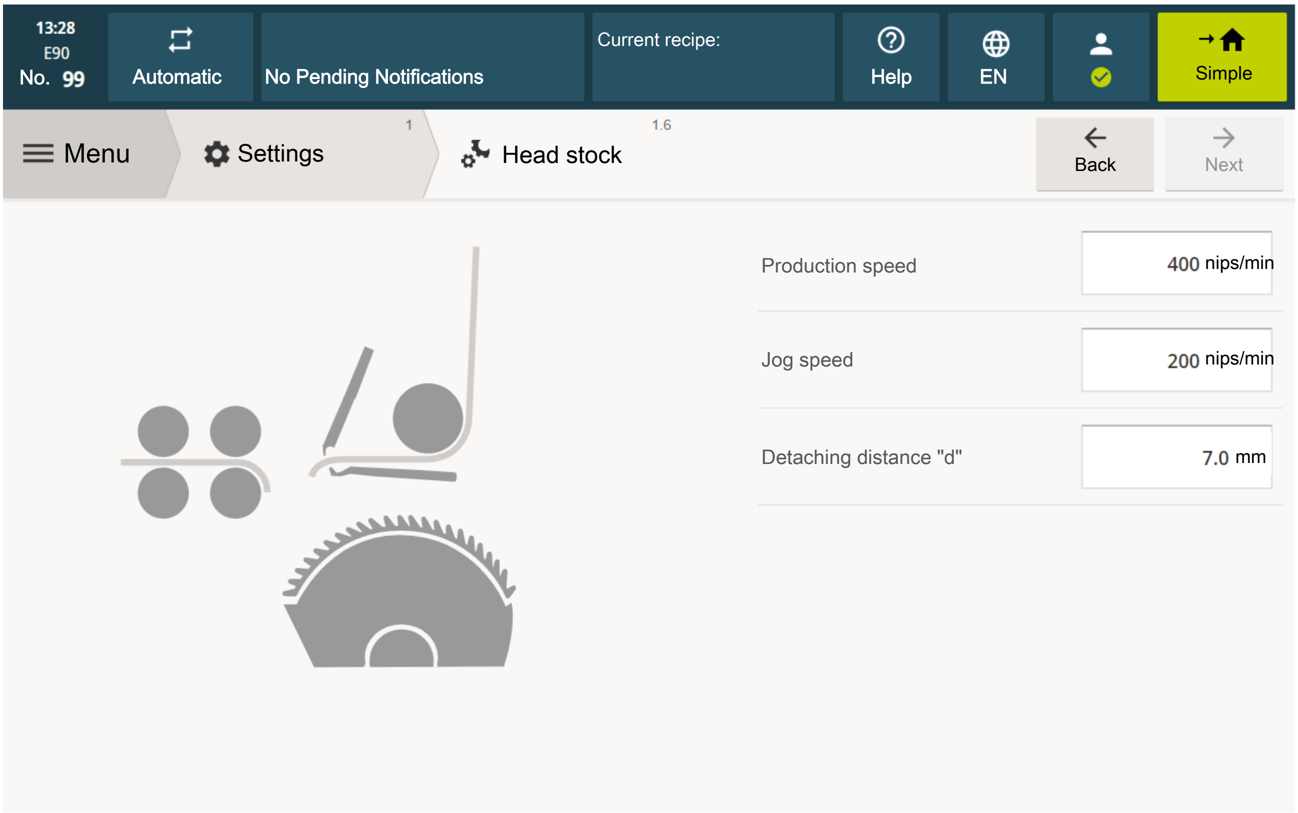


Figure 202: Penetration depth

This depth is to be entered in accordance with the penetration depth of top combs that is set at the machine.

The penetration depth of top combs must be selected in accordance with the requirement of the sliver values. This depth can be changed with the setting gauge (*refer to* ▸ *315*).

7.3.4.21 Data Screen 1.6 Head Stock


13:28
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Settings
1
1.6
Head stock
Back
Next

Production speed 400 nips/min

Jog speed 200 nips/min

Detaching distance "d" 7.0 mm

Figure 203: Data screen 1.6 Head stock

Production speed

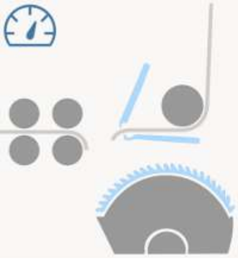


Figure 204: Production speed

The production speed of this machine can be set in this field.

Jog speed

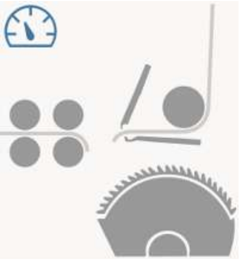


Figure 205: Jog speed

When the machine is operated with the jog button, the production needs to be decreased. This decreased speed can be set in this field.

Detaching distance "d"

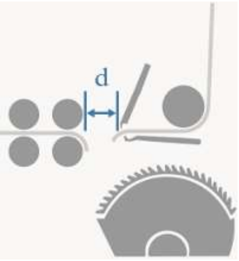
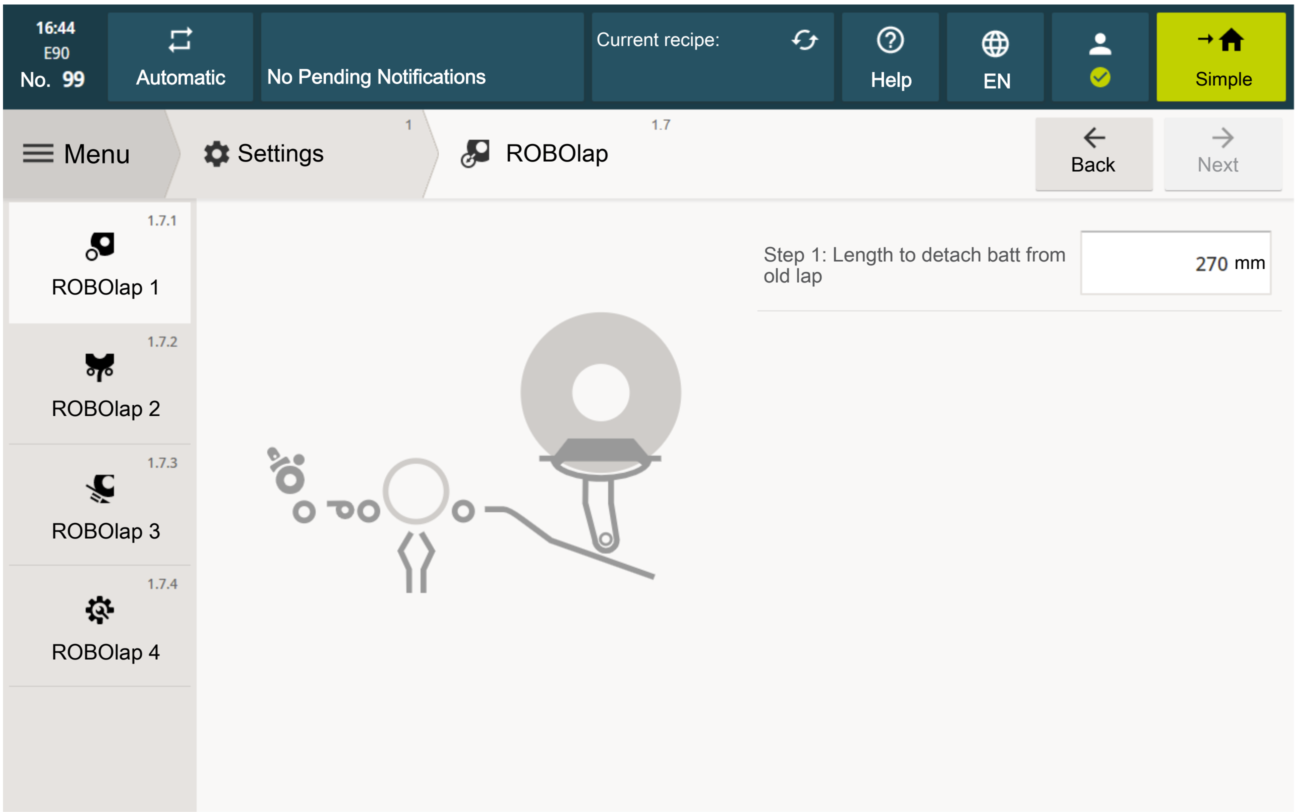


Figure 206: Detaching distance "d"

This distance is to be entered in accordance with the detaching distance that is set at the machine.

The detaching distance “d” is the distance between the bottom detaching cylinder and the bottom nipper. The detaching distance has an influence on the noil extraction. The detaching distance can be set with the device at the head stock (*refer to* ▸ *311*).

7.3.4.22 Data Screen 1.7.1 ROBOlap 1


16:44
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Settings
1
ROBOlap
1.7
Back
Next
1.7.1
ROBOlap 1
1.7.2
ROBOlap 2
1.7.3
ROBOlap 3
1.7.4
ROBOlap 4

Step 1: Length to detach batt from old lap 270 mm

Figure 207: Data screen 1.7.1 ROBOlap 1

Step 1: Length to detach batt from old lap

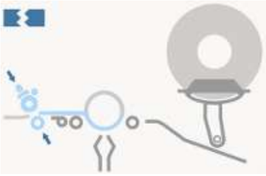
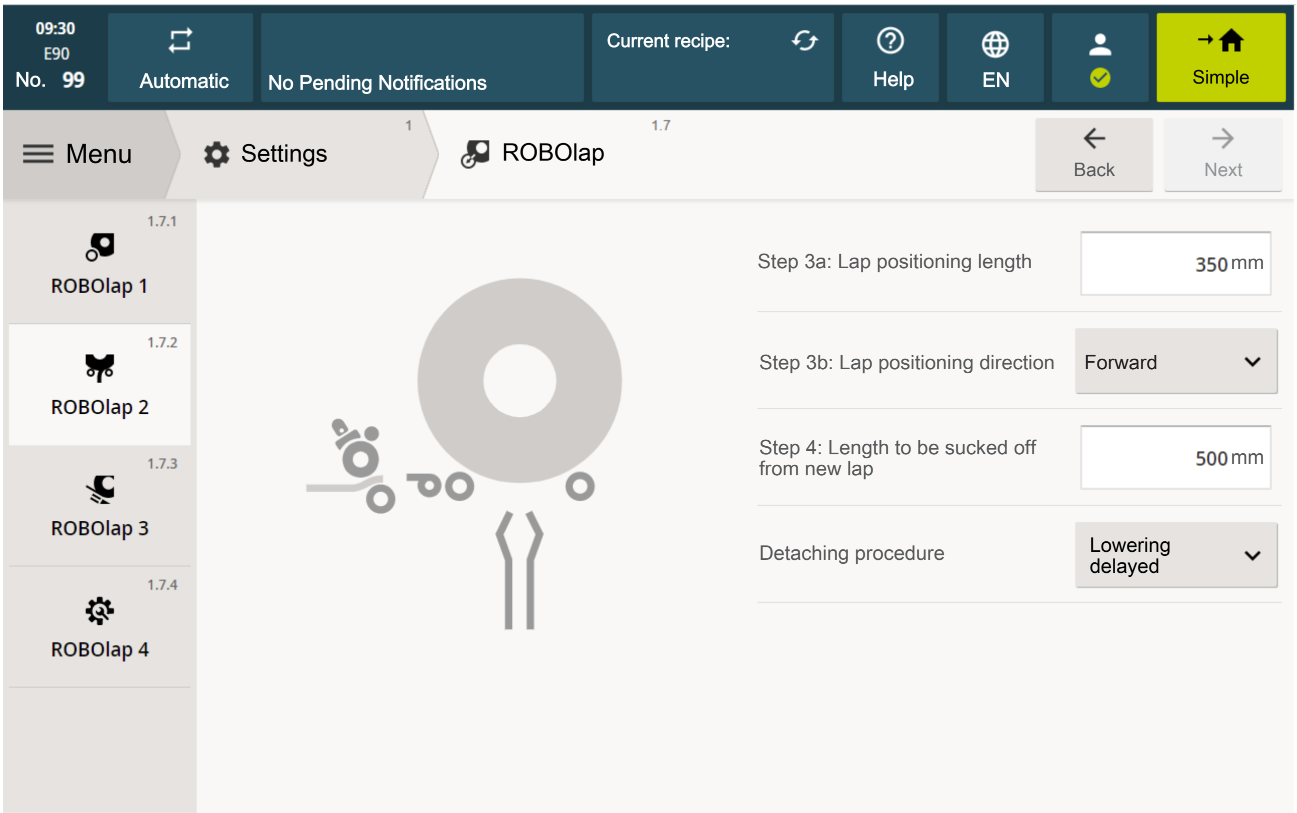


Figure 208: Step 1: Length to detach batt from old lap

To remove the remaining batt, the lap must be turned backward for a specified length after detaching. After this procedure, the fiber fringe must be moved to a point between the batt suction and the rear lap roller.

This length can be set in this field.

7.3.4.23 Data Screen 1.7.2 ROBOlap 2


09:30
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.7
ROBOlap
Back
Next
1.7.1
ROBOlap 1
1.7.2
ROBOlap 2
1.7.3
ROBOlap 3
1.7.4
ROBOlap 4

Step 3a: Lap positioning length 350 mm

Step 3b: Lap positioning direction Forward

Step 4: Length to be sucked off from new lap 500 mm

Detaching procedure Lowering delayed

Figure 209: Data screen 1.7.2 ROBOlap 2

Step 3a: Lap positioning length

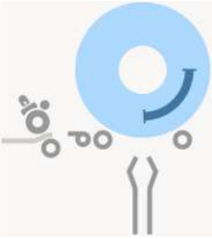


Figure 210: Step 3a: Lap positioning length

After the lap is moved from the lap carrier to the lap rollers, the lap is turned to detach and prepare evenly the fiber fringe of all 8 laps.

The length how long the lap is turned can be set in this filed.

To have a good production efficiency, the start of the batt is correctly positioned behind the rear lap roller. This is done with the setting of lap positioning length and lap position direction. A small value in this field decreases ROBOlap time.

Step 3b: Lap positioning direction

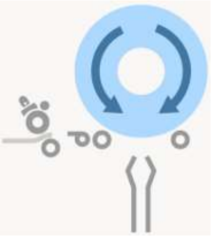


Figure 211: Step 3b: Lap positioning direction

The direction that the fiber fringe is moved can be set in this field.

To have a lower lap-change-time, use the direction where lap beginning is closest to the rear lap roller.

Step 4: Length to be sucked off from new lap

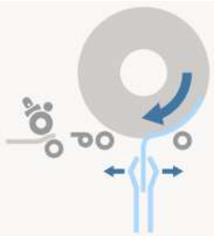


Figure 212: Step 4: Length to be sucked off from new lap

All 8 laps must have the batt edge on the same position. For this purpose, some batt is to be sucked off and ripped off by the batt clamp.

The amount of new batt material that is sucked off can be optimized with this setting.

If the batt edge is always on the same place, this value can be decreased.

Detaching procedure

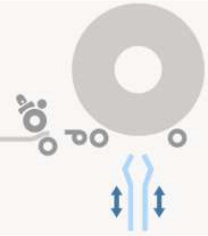


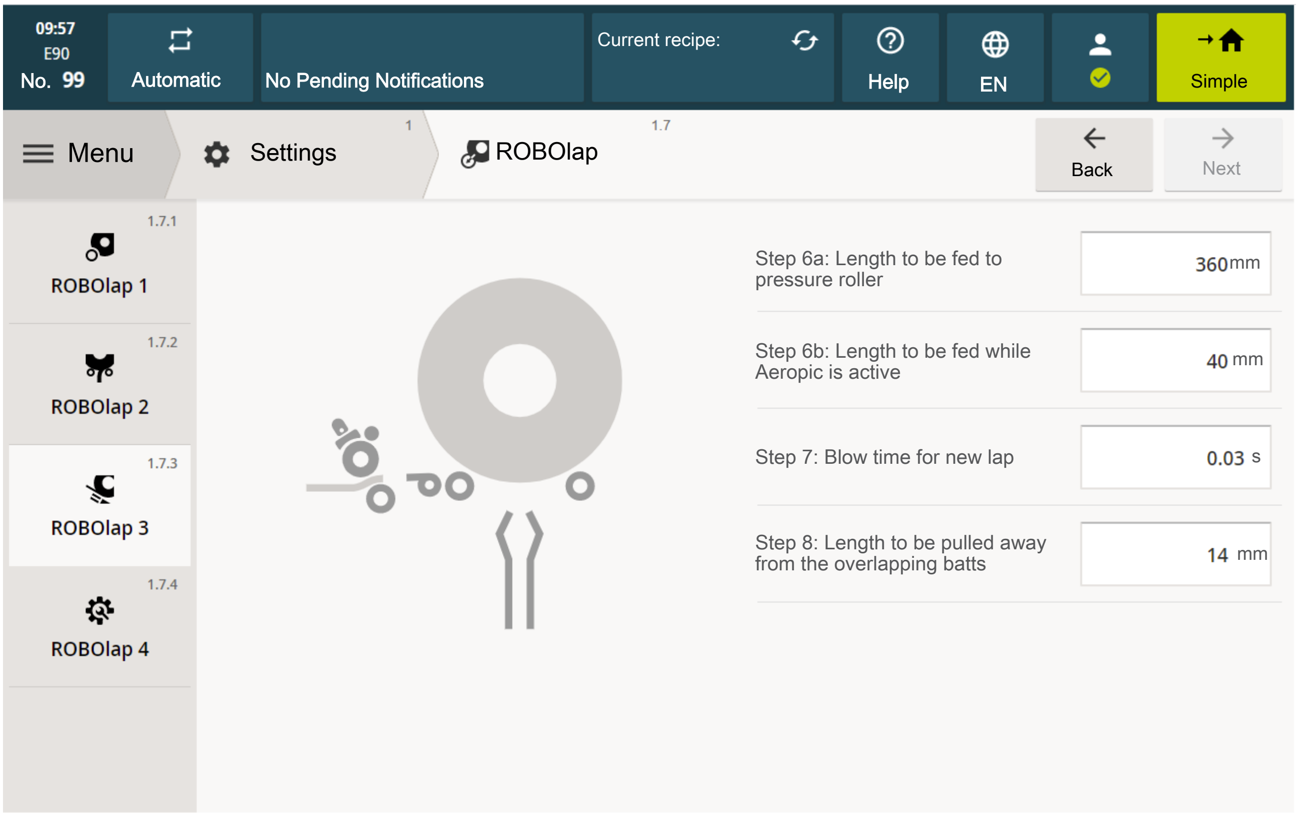
Figure 213: Detaching procedure

The batt detaching method can be selected in this field.

There are 4 detaching options that follow:

- **Lowering delayed**: The lap rollers turn backward. The batt suction unit becomes lowered with a short delay.
- **Lowering**: When the batt suction unit lowers, the lap rollers start to turn backward.
- **Bottom**: After the batt suction unit is lowered and clamps the batt, the lap rollers turn backward.
- **Top**: The batt suction remians up. The batt is clamped by the batt suction unit and the lap rollers turn backward.

7.3.4.24 Data Screen 1.7.3 ROBOlap 3


09:57
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.7
ROBOlap
Back
Next
1.7.1
ROBOlap 1
1.7.2
ROBOlap 2
1.7.3
ROBOlap 3
1.7.4
ROBOlap 4

Step 6a: Length to be fed to pressure roller: 360 mm

Step 6b: Length to be fed while Aeropic is active: 40 mm

Step 7: Blow time for new lap: 0.03 s

Step 8: Length to be pulled away from the overlapping batts: 14 mm

Figure 214: Data screen 1.7.3 ROBOlap 3

Step 6a: Length to be fed to pressure roller

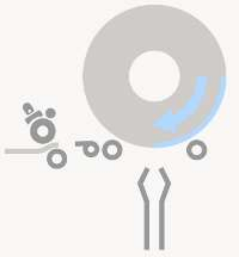


Figure 215: Step 6a: Length to be fed to pressure roller

The value defines the length of fringe that is turned from the lap to the AEROpic.

Step 6b: Length to be fed while Aeropic is active

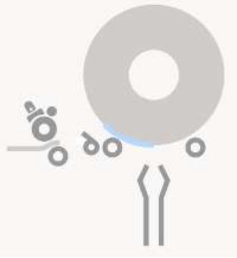


Figure 216: Step 6b: Length to be fed while Aeropic is active

The value defines the length of fringe before the fringe is turned to the AEROpic, the air starts to blow from the AEROpic.

Step 7: Blow time for new lap

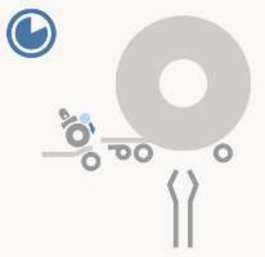


Figure 217: Step 7: Blow time for new lap

The time how long the air blows from the AEROpic can be set in this field.

Step 8: Length to be pulled away from the overlapping batts

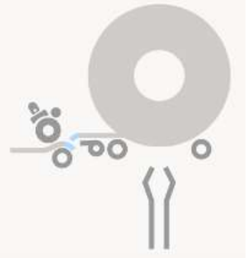
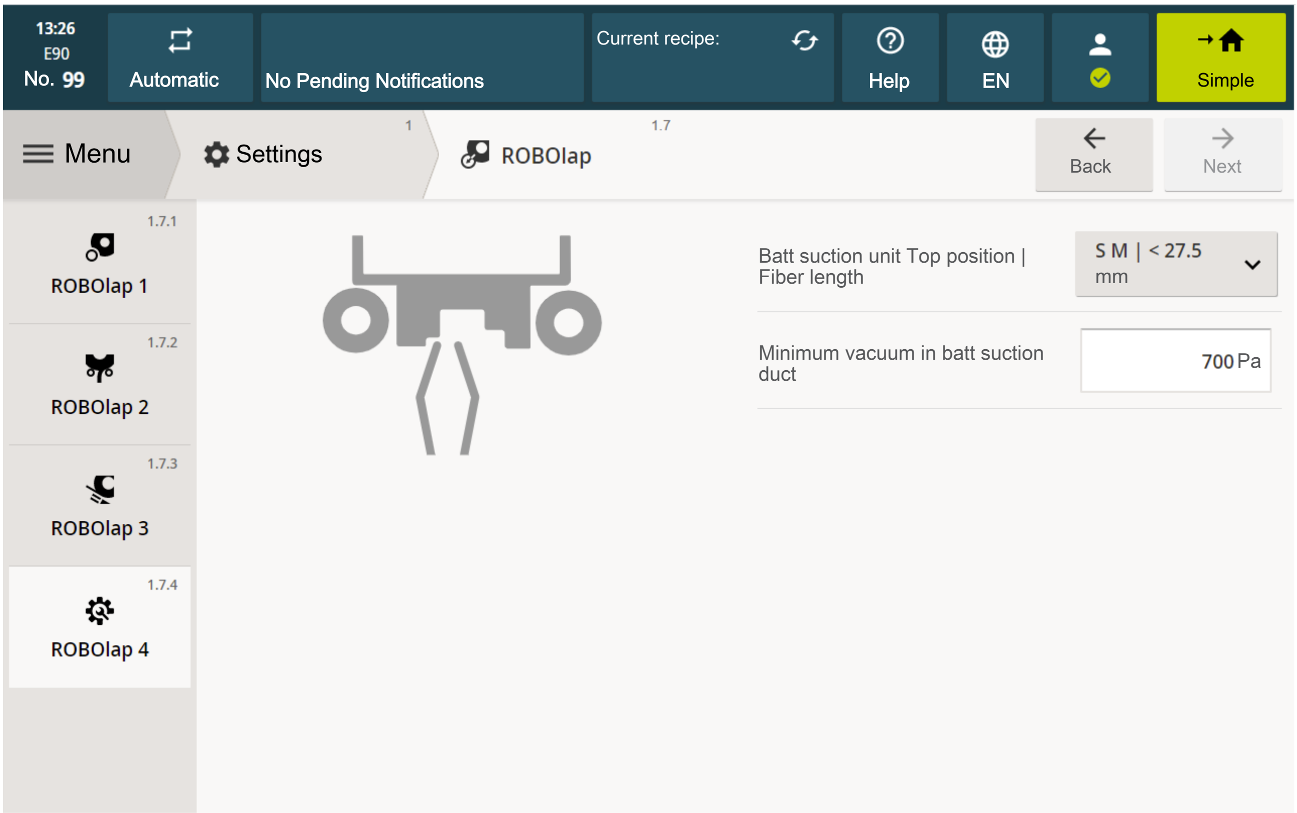


Figure 218: Step 8: Length to be pulled away from the overlapping batts

The value defines the length of the remaining batt that is pulled into the comber before the new lap starts to turn.

7.3.4.25 Data Screen 1.7.4 ROBOlap 4


13:26
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
1
Settings
1.7
ROBOlap
Back
Next
1.7.1
ROBOlap 1
1.7.2
ROBOlap 2
1.7.3
ROBOlap 3
1.7.4
ROBOlap 4

Batt suction unit Top position | Fiber length: S M | < 27.5 mm

Minimum vacuum in batt suction duct: 700 Pa

Figure 219: Data screen 1.7.4 ROBOlap 4

Batt suction unit Top position | Fiber length

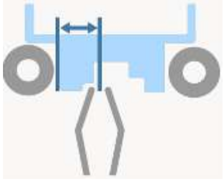


Figure 220: Batt suction unit Top position | Fiber length

This option is to be selected in accordance with current position of the ROBOlap suction unit. The position of the ROBOlap suction unit must be set in accordance with the fiber length.

Minimum vacuum in batt suction duct

Figure 221: Minimum vacuum in batt suction duct

This field shows the current minimal vacuum for ROBOlap suction.

7.3.5 Data Screen 2 Quality

This section contains the data screens about the sliver quality.

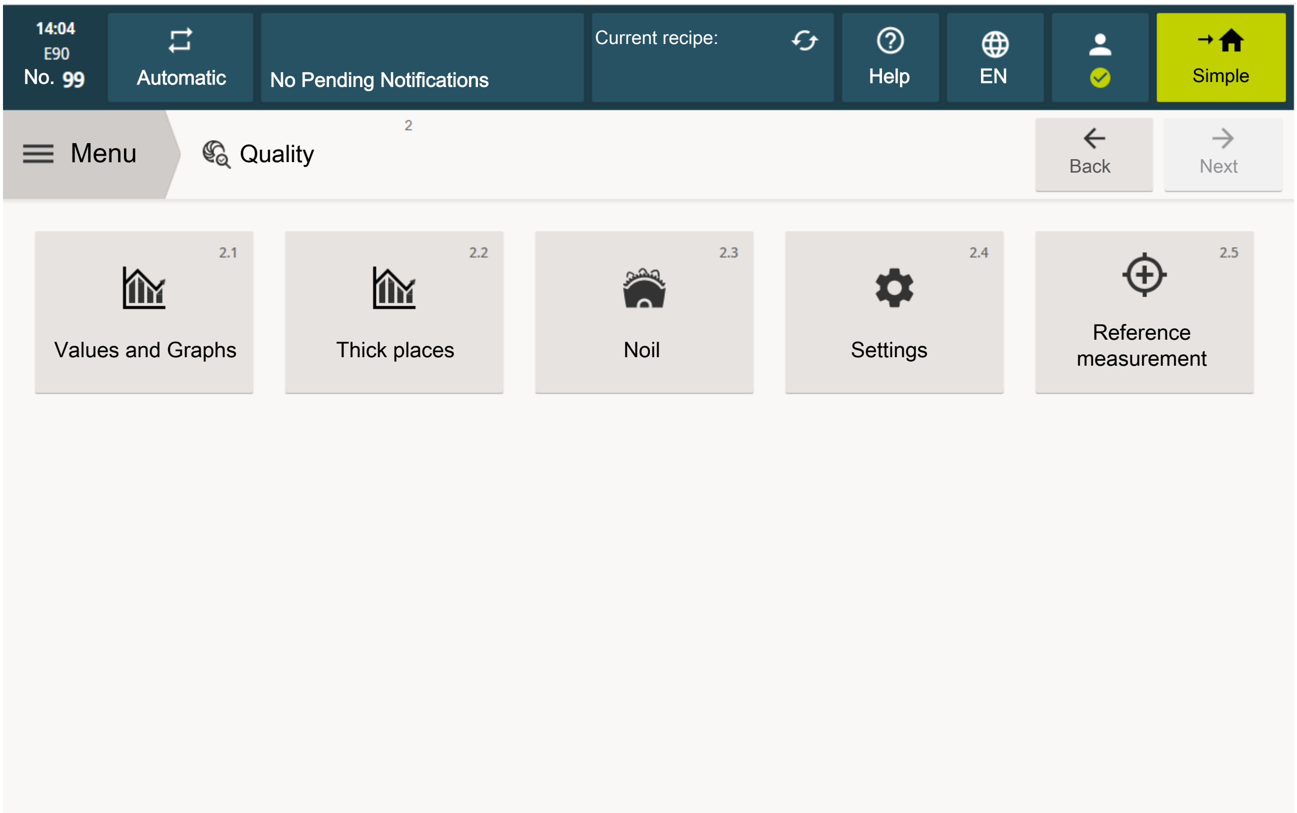

14:04
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Quality
2
Back
Next
2.1
Values and Graphs
2.2
Thick places
2.3
Noil
2.4
Settings
2.5
Reference measurement

Figure 222: Data screen 2 Quality

7.3.5.1 Data Screen 2.1.1 A% and CV Graph

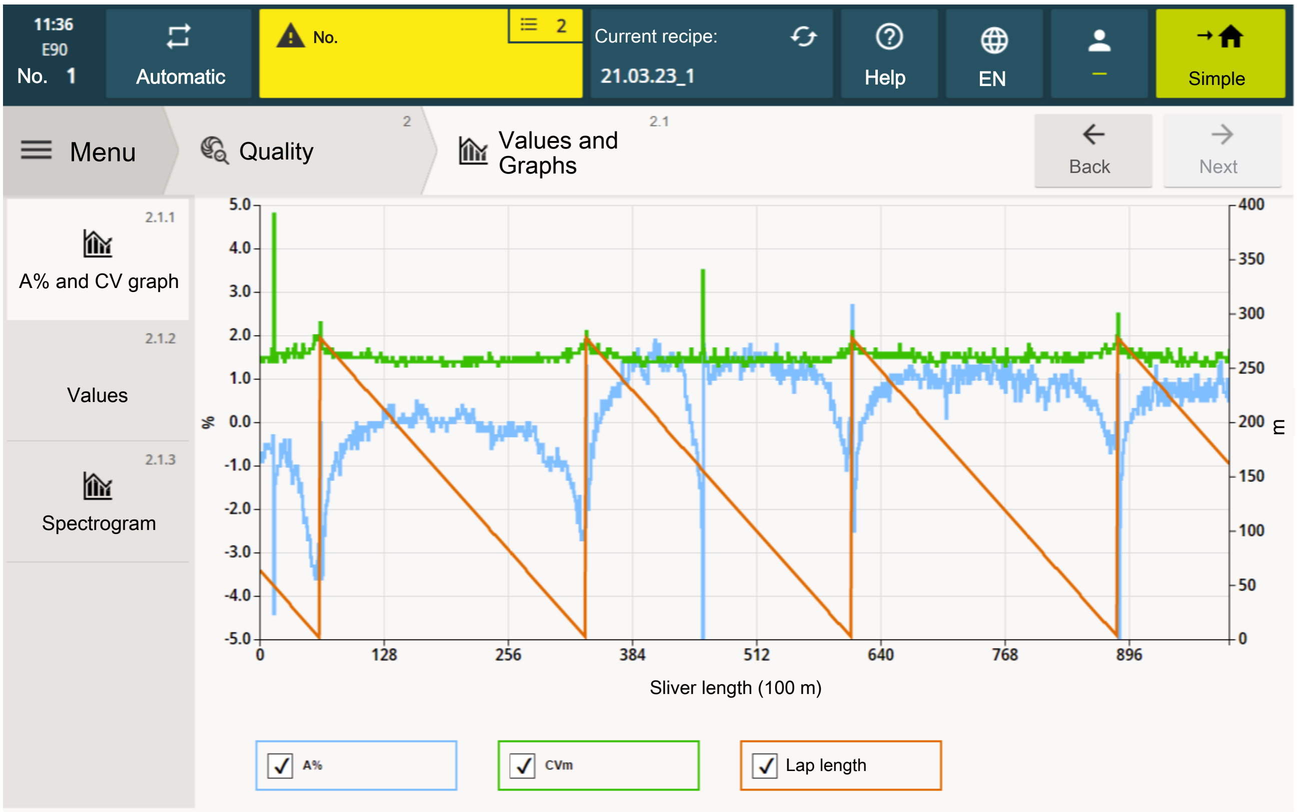
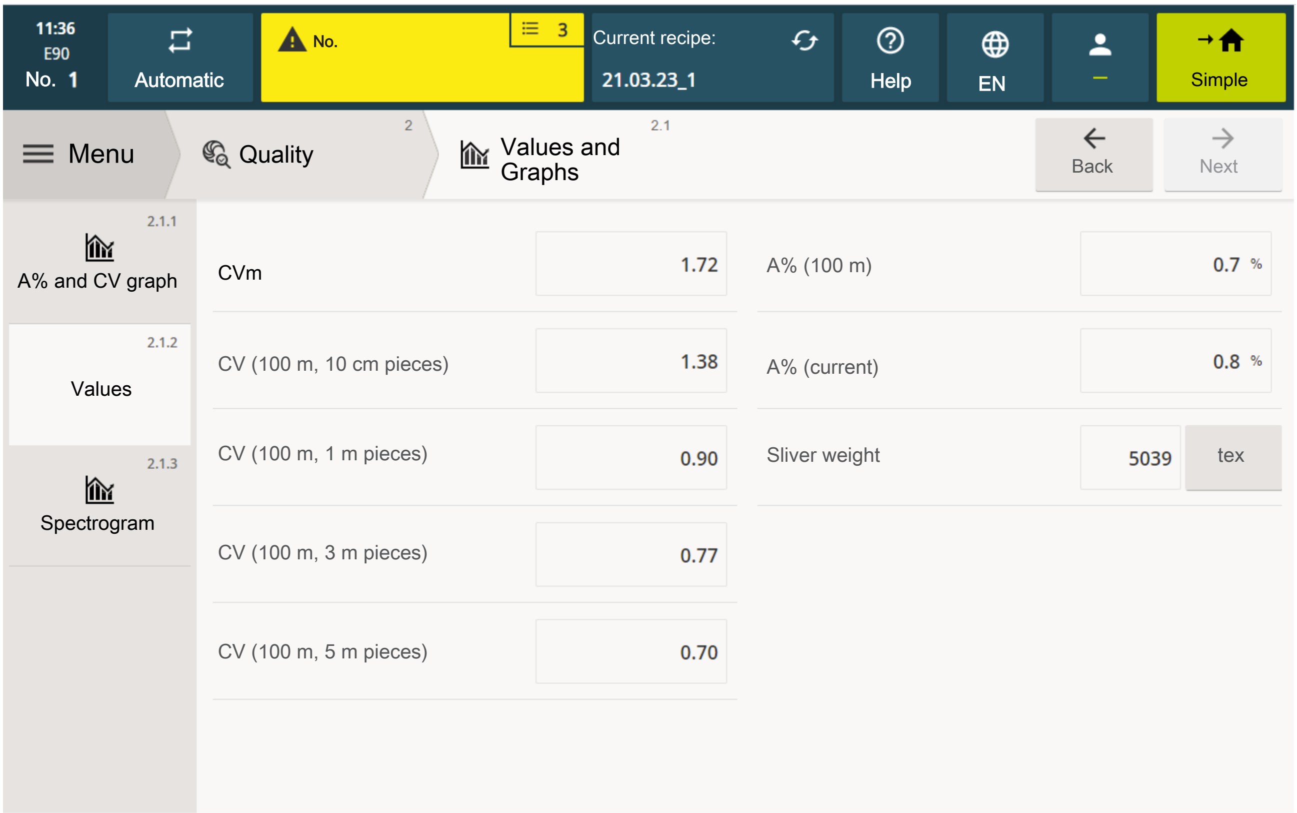

11:36
E90
No. 1
Automatic
No.
2
Current recipe:
21.03.23_1
Help
EN
Simple
Menu
Quality
2
Values and Graphs
2.1
Back
Next
2.1.1
A% and CV graph
2.1.2
Values
2.1.3
Spectrogram
%
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
0
128
256
384
512
640
768
896
Sliver length (100 m)
m
400
350
300
250
200
150
100
50
0
☑ A%
☑ CVm
☑ Lap length

Figure 223: Data screen 2.1.1 A% and CV graph

The A % and CV graph is shown in this data screen.

Each 100 m of sliver, a new point is recoded on this graph. The last 100 km of sliver are shown.

7.3.5.2 Data Screen 2.1.2 Values


11:36
E90
No. 1
Automatic
No.
3
Current recipe:
21.03.23_1
Help
EN
–
Simple
Menu
2
Quality
2.1
Values and Graphs
Back
Next
2.1.1
A% and CV graph
2.1.2
Values
2.1.3
Spectrogram

CVm 1.72

CV (100 m, 10 cm pieces) 1.38

CV (100 m, 1 m pieces) 0.90

CV (100 m, 3 m pieces) 0.77

CV (100 m, 5 m pieces) 0.70

A% (100 m) 0.7 %

A% (current) 0.8 %

Sliver weight 5039 tex

Figure 224: Data screen 2.1.2 Values

The data screen shows the current data of the CV values for different cutting lengths, the sliver weight, and A%.

7.3.5.3 Data Screen 2.1.3 Spectrogram

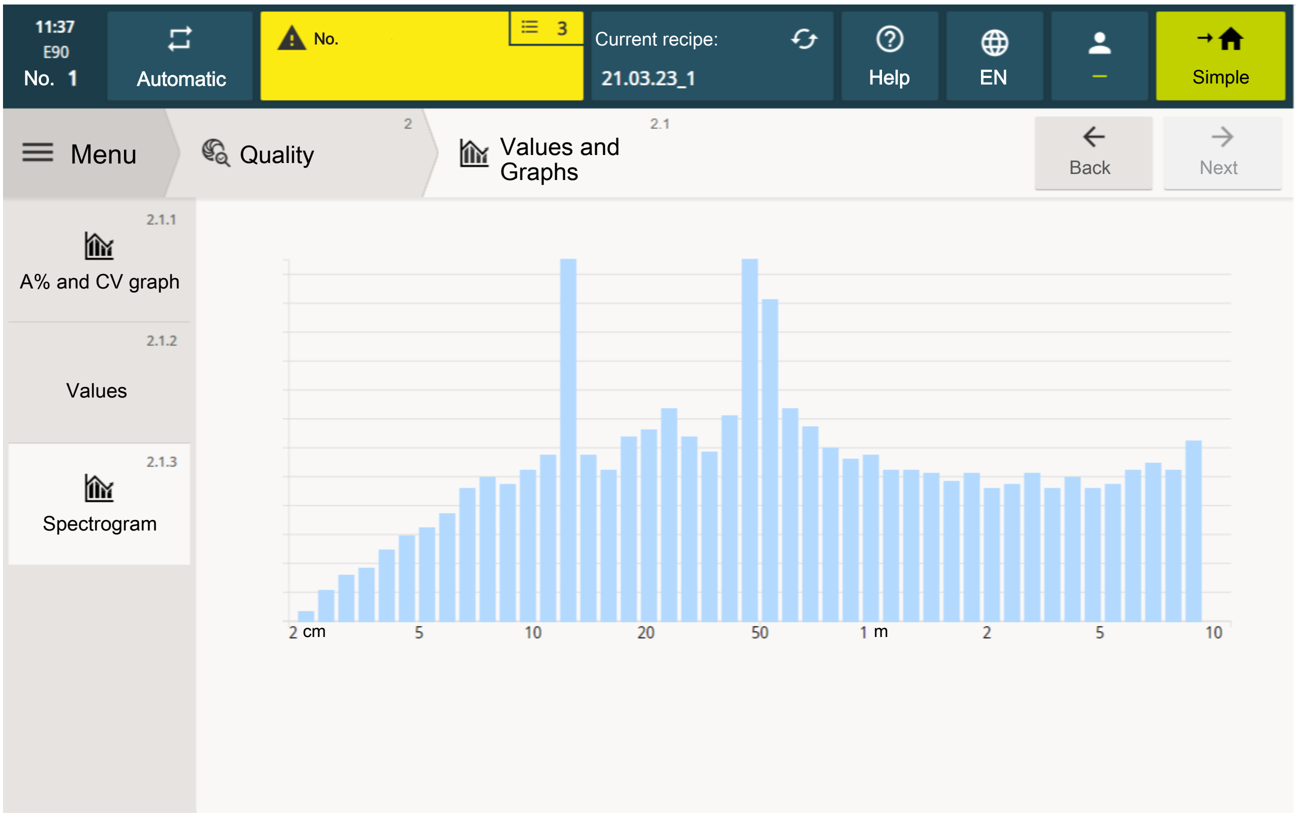

11:37
E90
No. 1
Automatic
No.
3
Current recipe:
21.03.23_1
Help
EN
Simple
Menu
Quality
2
Values and Graphs
2.1
Back
Next
2.1.1
A% and CV graph
2.1.2
Values
2.1.3
Spectrogram
2 cm
5
10
20
50
1 m
2
5
10

Figure 225: Data screen 2.1.3 Spectrogram

The data screen shows the spectrogram graph for different measuring lengths of the sliver.

7.3.5.4 Data Screen 2.2 Thick Places

This data screen contains the number of thick places that are shown in 2 different counting ways.

Data Screen 2.2.1

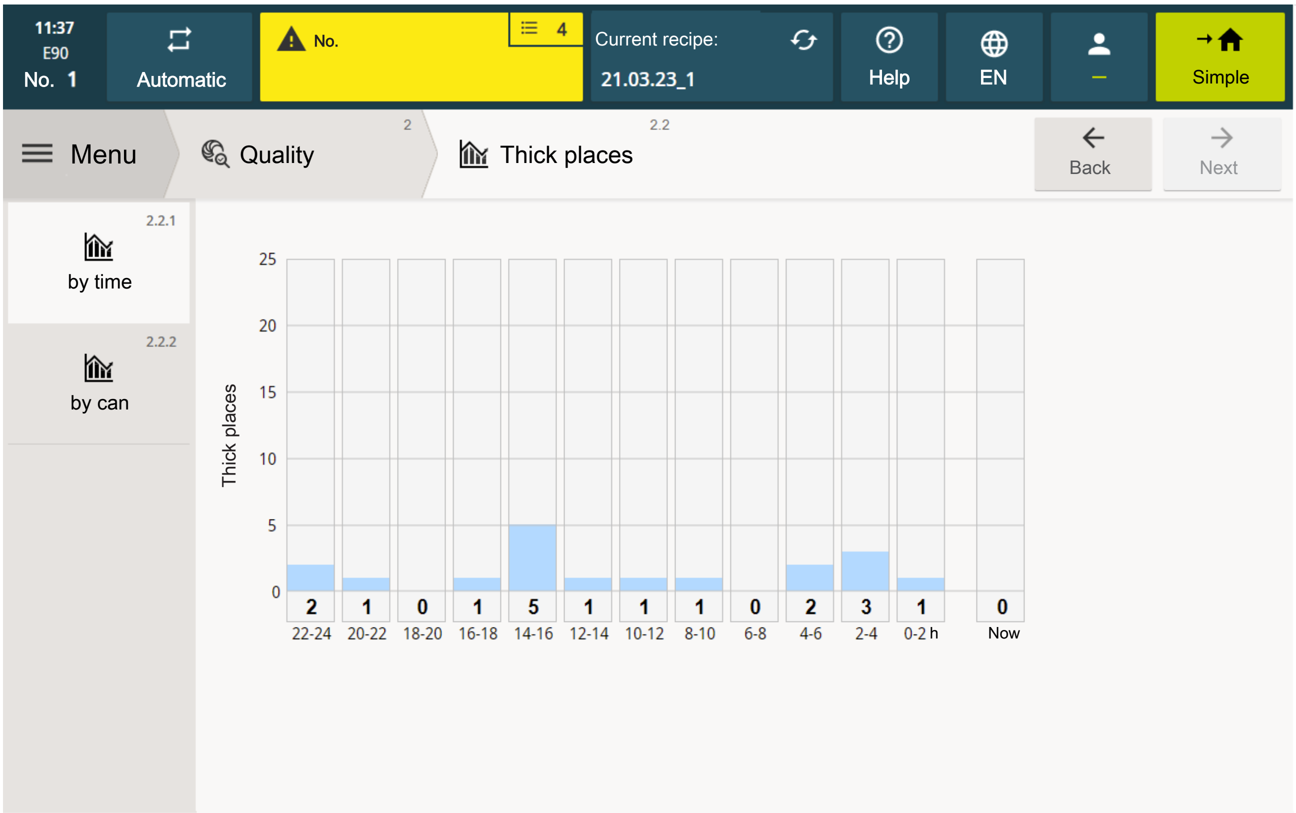
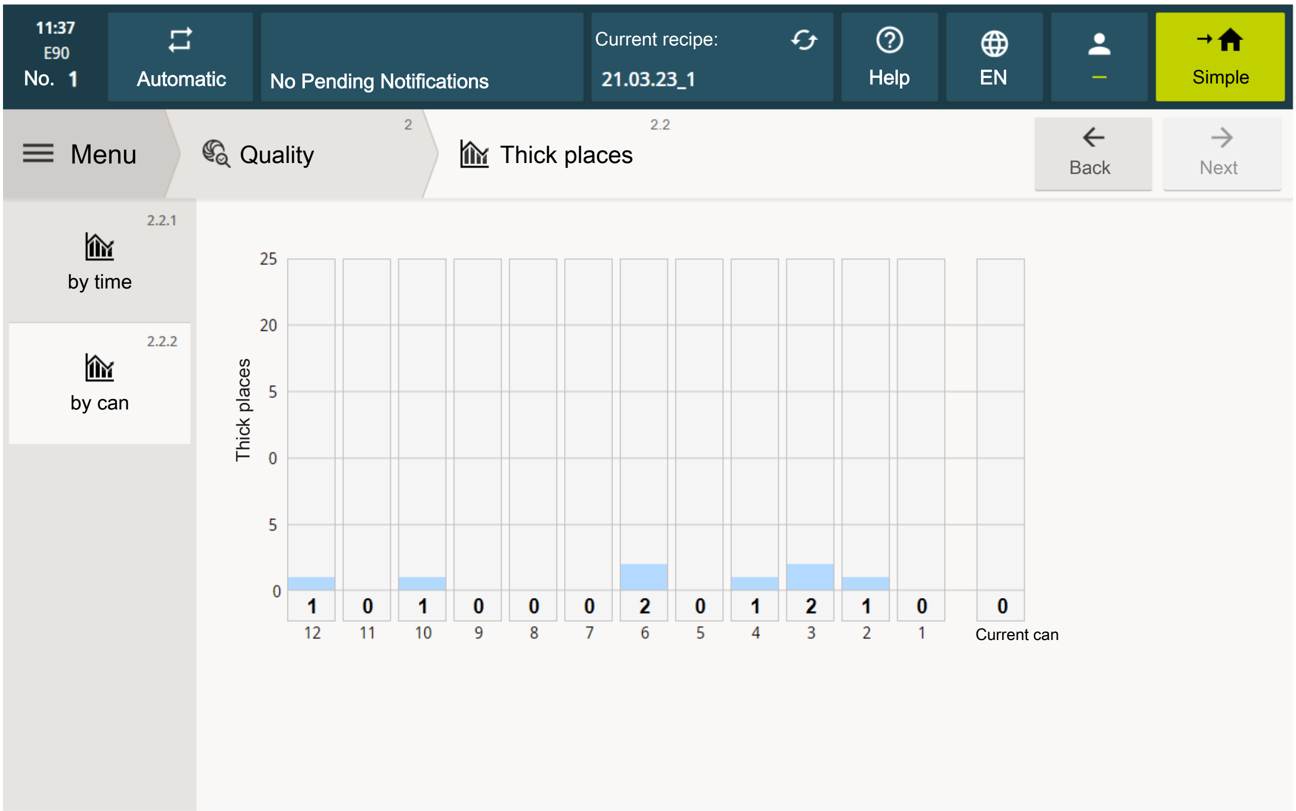

11:37
E90
No. 1
Automatic
No.
4
Current recipe:
21.03.23_1
Help
EN
–
Simple
Menu
2
Quality
2.2
Thick places
Back
Next
2.2.1
by time
2.2.2
by can
Thick places
25
20
15
10
5
0
2
1
0
1
5
1
1
1
0
2
3
1
0
22-24
20-22
18-20
16-18
14-16
12-14
10-12
8-10
6-8
4-6
2-4
0-2 h
Now

Figure 226: Data screen 2.2.1 Thick places by time

This data screen shows the graph of the number of thick places in the last 24 hours.

Data Screen 2.2.2


11:37
E90
No. 1
Automatic
Help
EN
–
Simple
Menu
2
Quality
2.2
Thick places
Back
Next
2.2.1
by time
2.2.2
by can
Thick places
25
20
5
0
5
0
1
0
1
0
0
0
2
0
1
2
1
0
0
12
11
10
9
8
7
6
5
4
3
2
1
Current can

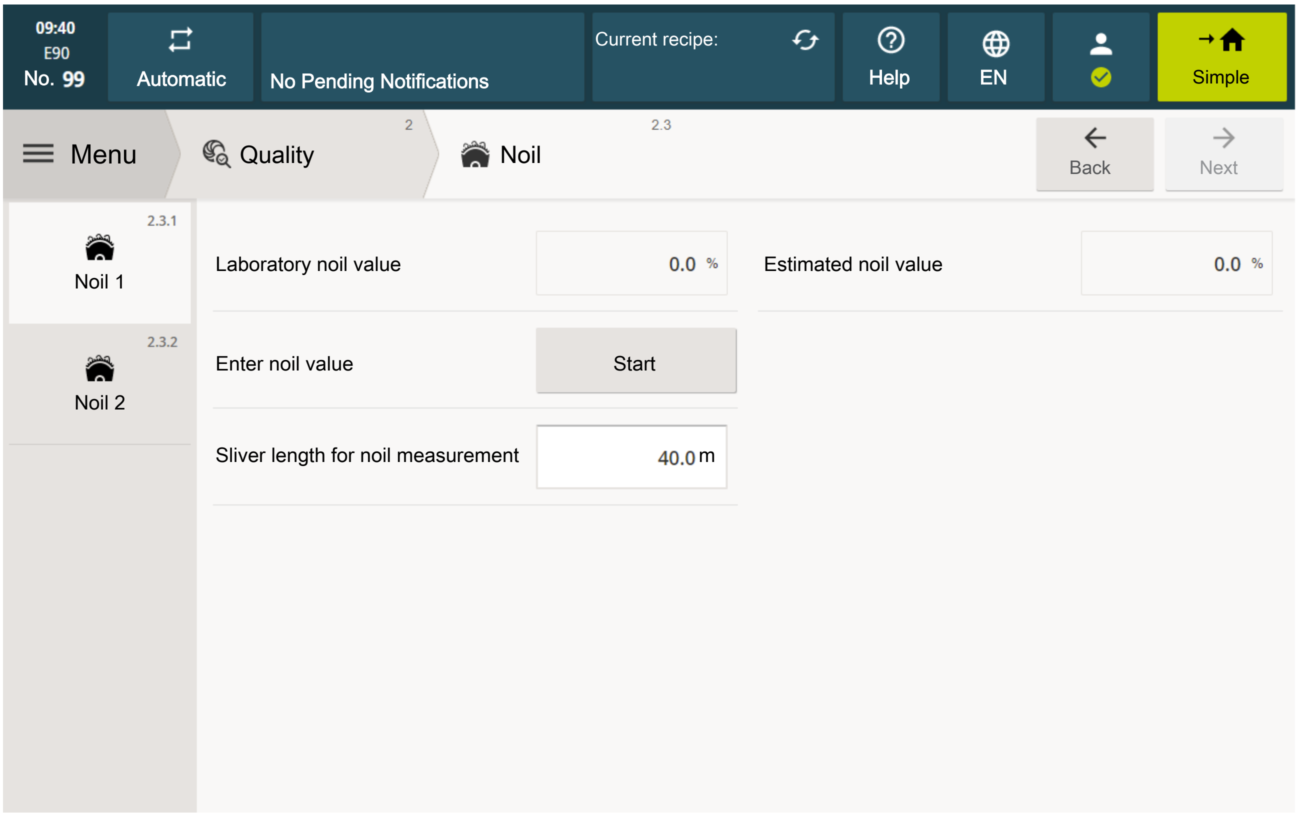
No Pending Notifications

Current recipe: 21.03.23_1

Figure 227: Data screen 2.2.2 Thick places by can

This data screen shows the graph of thick places status in the last 12 filled cans.

7.3.5.5 Data Screen 2.3.1 Noil 1


09:40
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
2
Quality
2.3
Noil
Back
Next
2.3.1
Noil 1
2.3.2
Noil 2
Start

Laboratory noil value 0.0 %

Estimated noil value 0.0 %

Enter noil value

Sliver length for noil measurement 40.0 m

Figure 228: Data screen 2.3.1 Noil 1

Estimated noil value

This is the estimate noil value which calculated from the machine settings especially the batt weight and the measured sliver weight.

Enter noil value

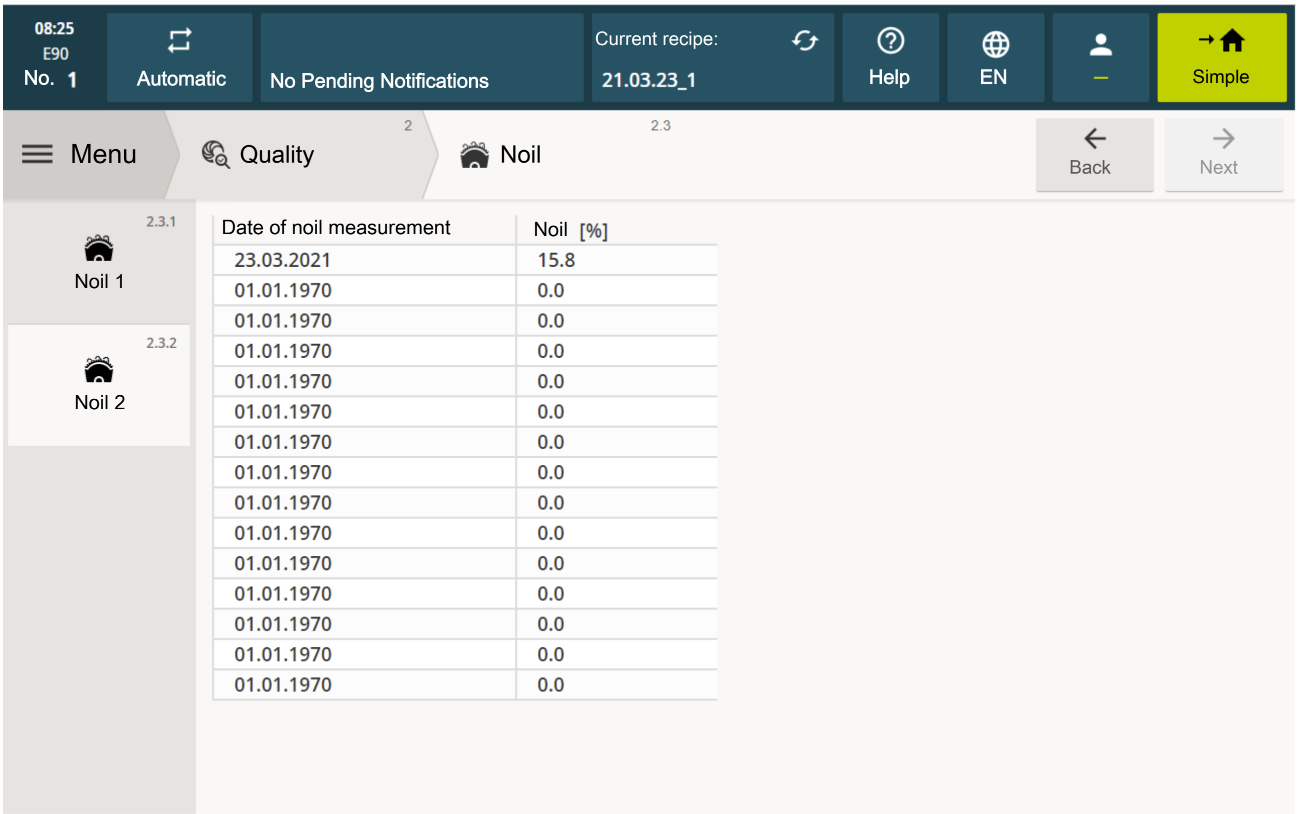
By tapping the key **Start**, a dialog is shown. The laboratory noil value can be entered in the dialog. The entered value will then be shown in the field **Laboratory noil value**.

This dialog is also shown when the noil measurement button is pushed.

Sliver length for noil measurement

During the noil measuring procedure, the slive length that is produced can be set in this field.

7.3.5.6 Data Screen 2.3.2 Noil 2


08:25
E90
No. 1
Automatic
No Pending Notifications
Help
EN
–
Simple
Menu
2
Quality
2.3
Noil
Back
Next
2.3.1
Noil 1
2.3.2
Noil 2

Current recipe: 21.03.23_1

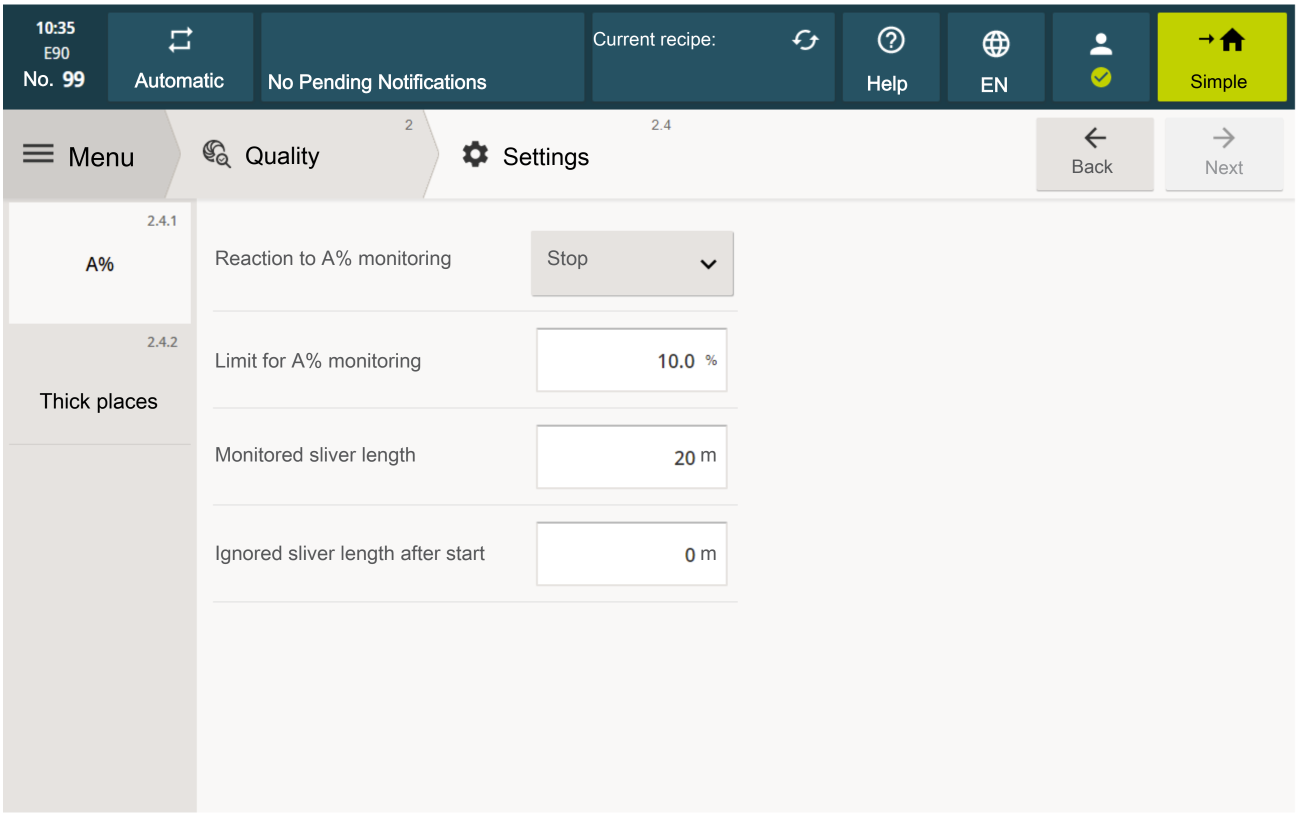
Date of noil measurement	Noil [%]
23.03.2021	15.8
01.01.1970	0.0
01.01.1970	0.0
01.01.1970	0.0
01.01.1970	0.0
01.01.1970	0.0
01.01.1970	0.0
01.01.1970	0.0
01.01.1970	0.0
01.01.1970	0.0
01.01.1970	0.0
01.01.1970	0.0
01.01.1970	0.0
01.01.1970	0.0
01.01.1970	0.0

Figure 229: Data screen 2.3.2 Noil 2

This data screen gives a list of the noil measurement result.

If the interval between the last entry and the latest entry is less than 1 hour, the last entry is overwritten by the latest entry.

7.3.5.7 Data Screen 2.4.1 A%


10:35
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
2
Quality
2.4
Settings
Back
Next
2.4.1
A%
2.4.2
Thick places

Reaction to A% monitoring: Stop

Limit for A% monitoring: 10.0 %

Monitored sliver length: 20 m

Ignored sliver length after start: 0 m

Figure 230: Data screen 2.4.1 A%

Reaction to A% monitoring

This field defines how the machine reacts when the A% value is more than the set limit value:

- **Stop**: The machine stops.
- **Warning**: The machine shows a warning message, but the machine continues to work.

It is suggested to select the option **Stop**.

Limit for A% monitoring

If the current value is more than this set limit value, the machine stops or the machine shows a warning message.

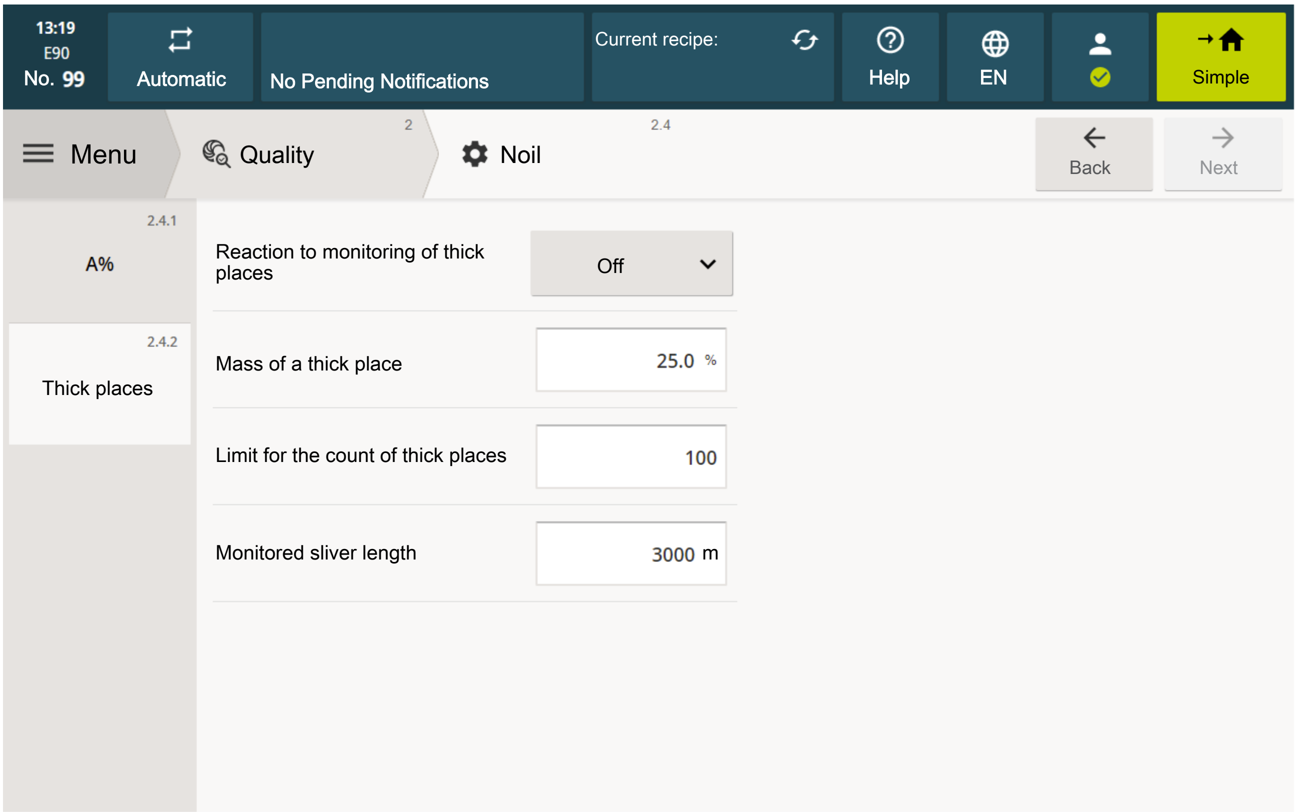
Monitored sliver length

The sliver length that to be monitored can be set in this field.

Ignored sliver length after start

The sliver length that is not monitored after the machine is started can be set in this field.

7.3.5.8 Data Screen 2.4.2 Thick Places


13:19
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
2
Quality
2.4
Noil
Back
Next
2.4.1
A%
2.4.2
Thick places

Reaction to monitoring of thick places: Off

Mass of a thick place: 25.0 %

Limit for the count of thick places: 100

Monitored sliver length: 3000 m

Figure 231: Data screen 2.4.2 Thick places

Reaction to monitoring of thick places

This field defines how the machine reacts when the number of thick places is more than the set limit value:

- **Stop**: The machine stops.
- **Warning**: The machine shows a warning message, but the machine continues to work.
- **Off**: The machine does not monitor the thick places.

Mass of a thick place

If the sliver mass is increased more than the percentage that is set in this field, a thick place is counted.

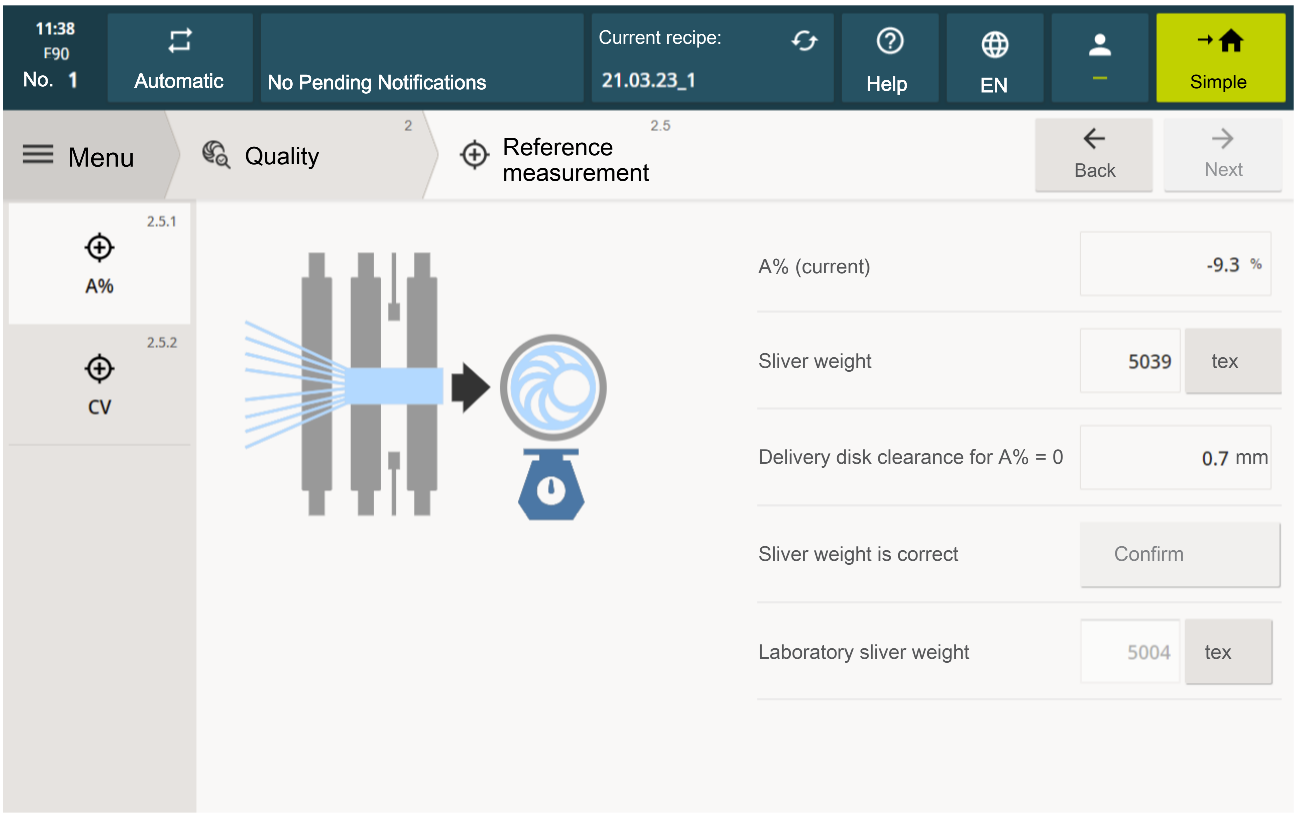
Limit for the count of thick places

If the number of thick places is more than this set value, the machine stops or the machine shows a warning message. If the machine is started again, the measurement starts again.

Monitored sliver length

The sliver length that to be monitored can be set in this field.

7.3.5.9 Data Screen 2.5.1 A%


11:38
F90
No. 1
Automatic
No Pending Notifications
Current recipe:
21.03.23_1
Help
EN
Simple
Menu
2
Quality
2.5
Reference measurement
Back
Next
2.5.1
A%
2.5.2
CV

A% (current) -9.3 %
Sliver weight 5039 tex
Delivery disk clearance for A% = 0 0.7 mm
Sliver weight is correct Confirm
Laboratory sliver weight 5004 tex

Figure 232: Data screen 2.5.1 A%

The reference measurement of A% is to be done regularly (*refer to ▸ 432*).

A% (current)

The current A% value is shown.

Sliver weight

The actual sliver weight, which is corrected by the A% is shown in this field.

Before correcting the sliver weight, the target sliver weight must be entered in the data screen 1.3.5.

Delivery disk clearance for A% = 0

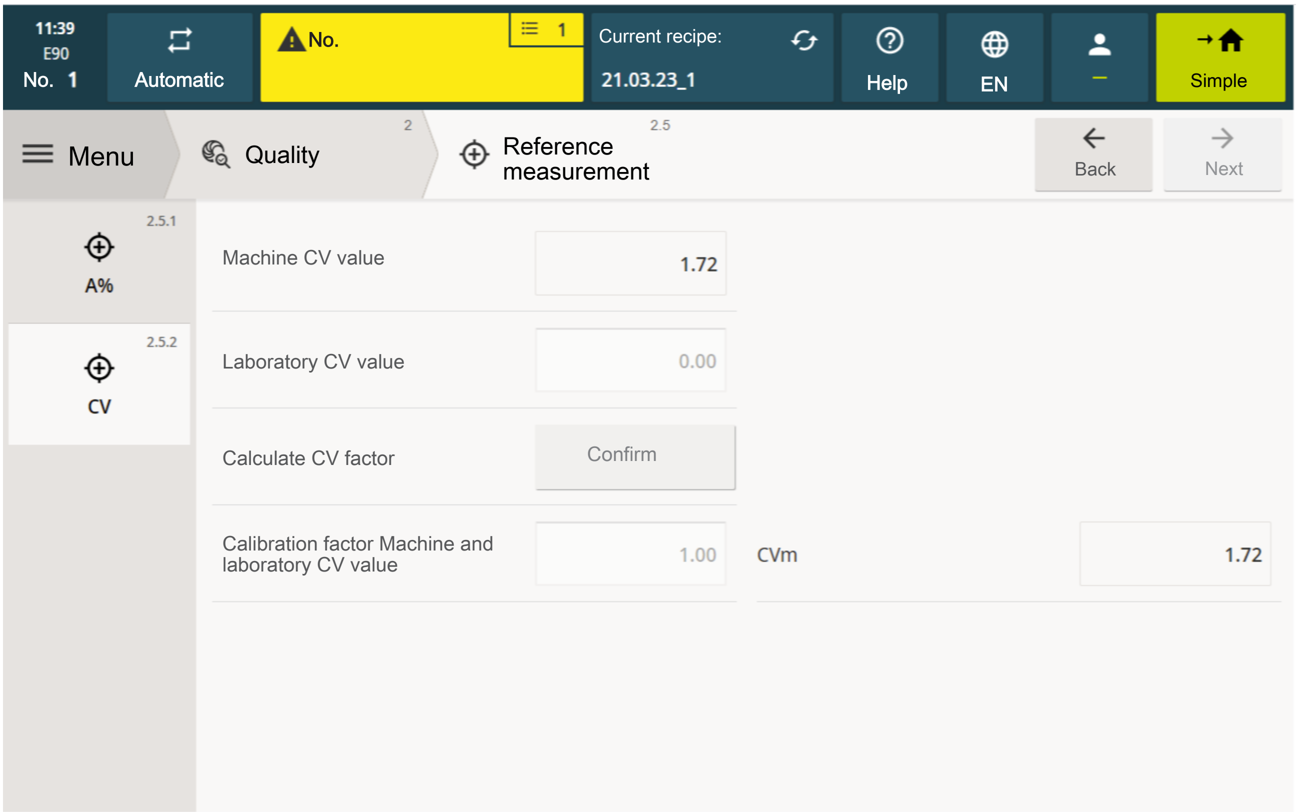
After the delivery disk is calibrated in the data screen 7.3.2, the delivery disk distance is shown in this field.

The calibration is only done on machine startup or if the mechanics is changed.

Sliver weight is correct

After some sliver is produced to measure the sliver weight in the laboratory, tap the key **Confirm**. If the measured sliver weight is different from the target sliver weight, enter the actual value in the field **Laboratory sliver weight**.

7.3.5.10 Data Screen 2.5.2 CV


11:39
E90
No. 1
Automatic
No.
1
Current recipe:
21.03.23_1
Help
EN
Simple
Menu
Quality
2
Reference measurement
2.5
Back
Next
2.5.1
A%
2.5.2
CV

Machine CV value 1.72

Laboratory CV value 0.00

Calculate CV factor Confirm

Calibration factor Machine and laboratory CV value 1.00

CVm 1.72

Figure 233: Data screen 2.5.2 CV

Machine CV value

The actual CV is shown in this field.

Laboratory CV value

This parameter is used to adapt the measured CV% value to the measuring equipment in the laboratory. The value that is calculated in the laboratory is to be entered into this field.

The machine is to be stopped during the production and then the sliver is to be removed from it for the laboratory measurement.

Calculate CV factor

By tapping the key **Confirm** , the CV factor can be calculated.

Calibration factor Machine and laboratory CV value

The calculated CV factor is shown in this field. The factor is also possible to be entered manually.

CVm

CVm = Machine CV value / Calibration factor Machine and laboratory CV value

7.3.6 Data Screen 3 Analysis

This section contains the information about the machine data analysis.

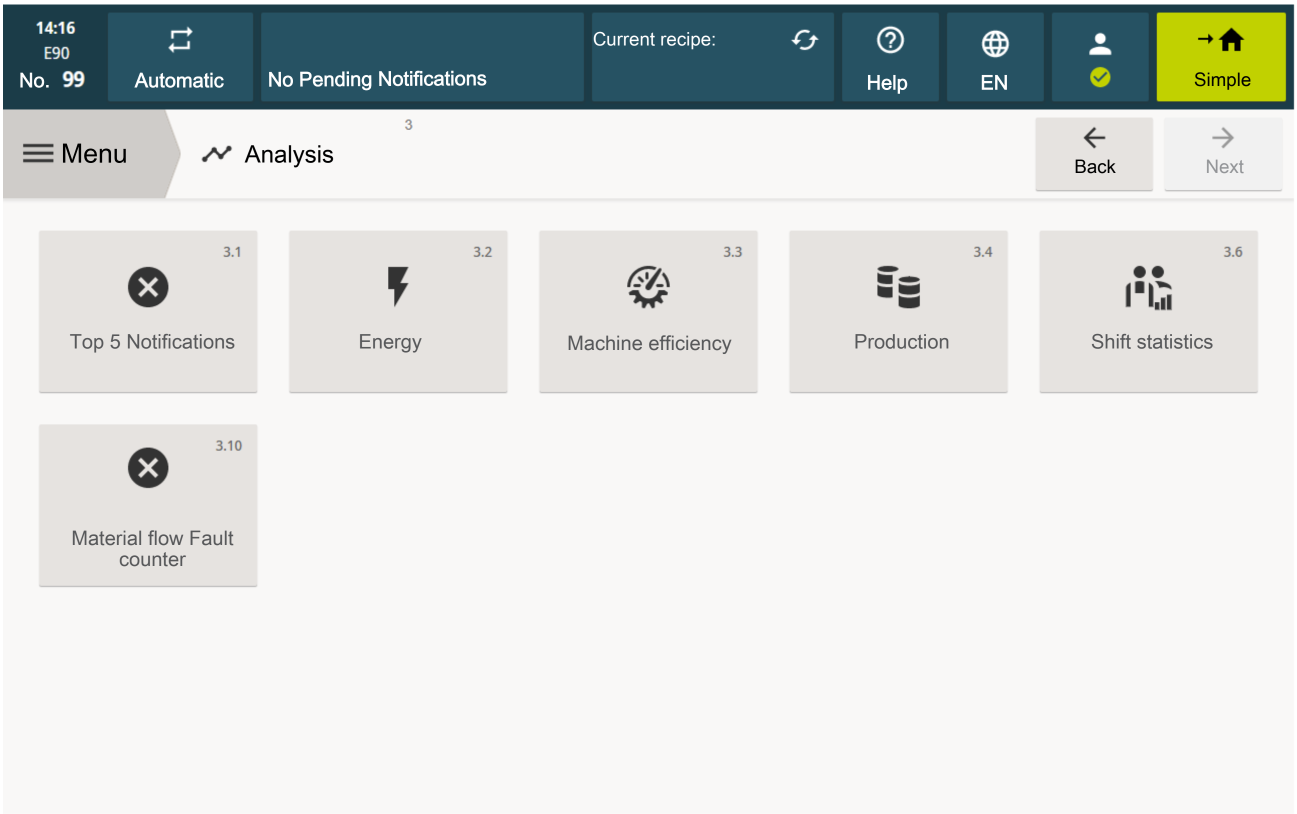
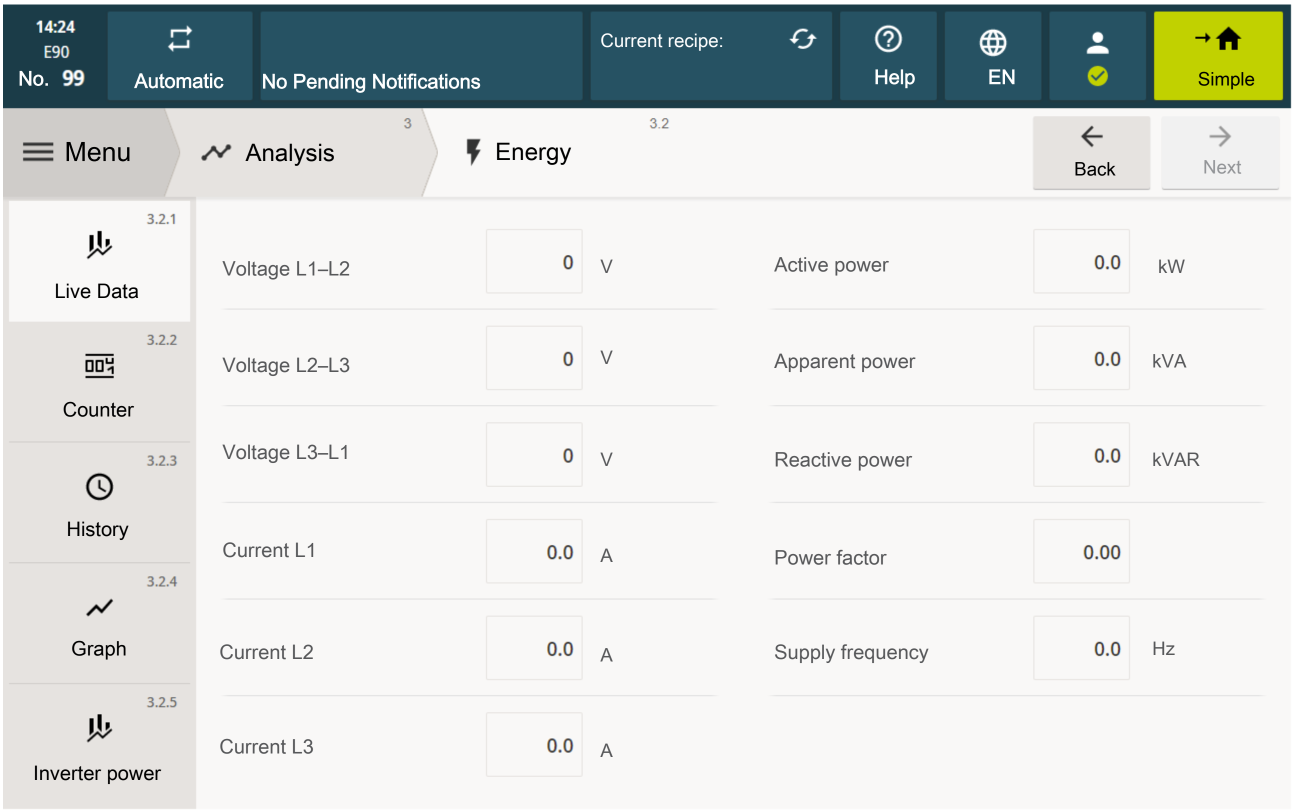

14:16
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
3
Analysis
Back
Next
3.1
Top 5 Notifications
3.2
Energy
3.3
Machine efficiency
3.4
Production
3.6
Shift statistics
3.10
Material flow Fault counter

Figure 234: Data screen 3 Analysis

7.3.6.1 Data Screen 3.2.1 Live Data

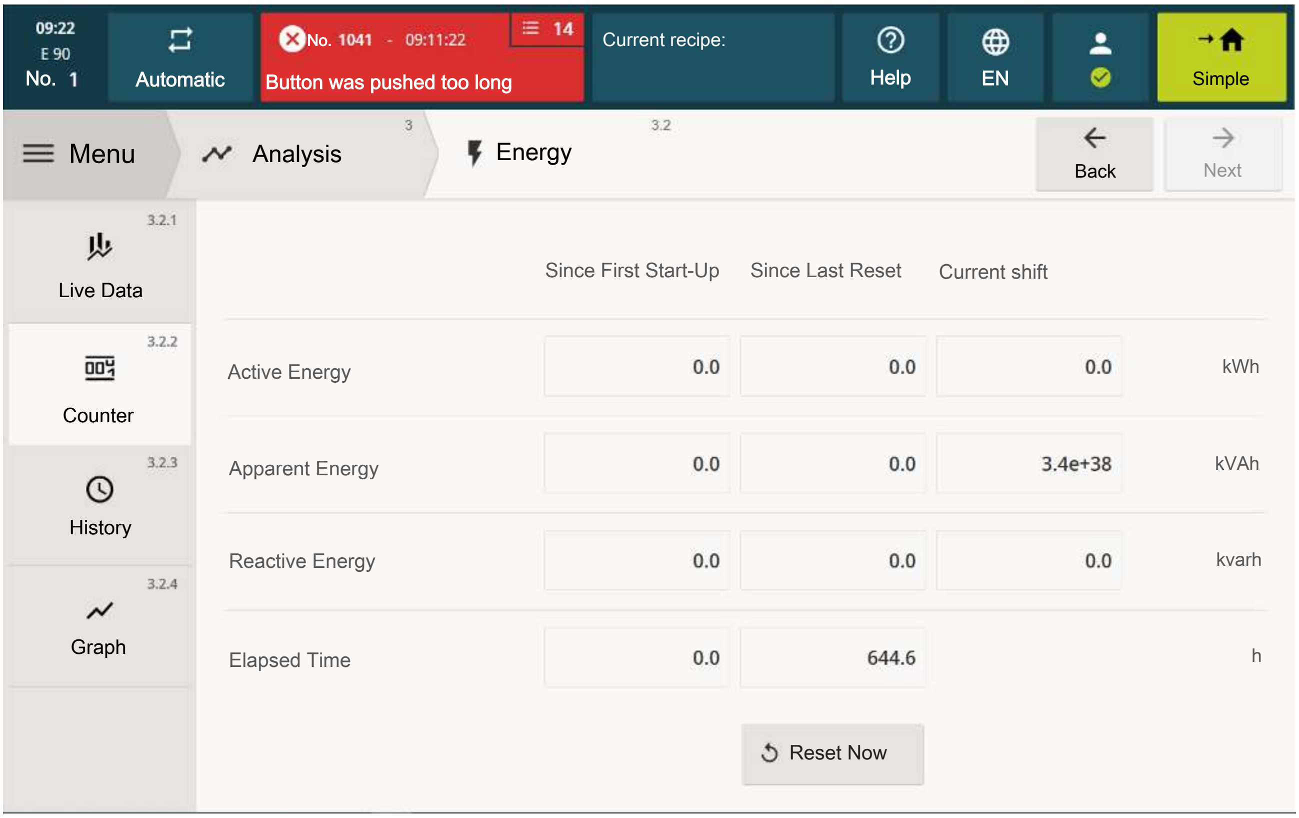

14:24
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Analysis
3
Energy
3.2
Back
Next
3.2.1
Live Data
3.2.2
Counter
3.2.3
History
3.2.4
Graph
3.2.5
Inverter power

Voltage L1–L2 0 V
Voltage L2–L3 0 V
Voltage L3–L1 0 V
Current L1 0.0 A
Current L2 0.0 A
Current L3 0.0 A
Active power 0.0 kW
Apparent power 0.0 kVA
Reactive power 0.0 kVAR
Power factor 0.00
Supply frequency 0.0 Hz

Figure 235: Data screen 3.2.1 Live Data

This data screen shows the current energy-related data of the machine.

7.3.6.2 Data Screen 3.2.2 Counter


09:22
E 90
No. 1
Automatic
14
Current recipe:
Help
EN
Simple
Menu
3
Analysis
3.2
Energy
Back
Next
3.2.1
Live Data
3.2.2
Counter
3.2.3
History
3.2.4
Graph
Reset Now

No. 1041 - 09:11:22
Button was pushed too long

	Since First Start-Up	Since Last Reset	Current shift	
Active Energy	0.0	0.0	0.0	kWh
Apparent Energy	0.0	0.0	3.4e+38	kVAh
Reactive Energy	0.0	0.0	0.0	kvarh
Elapsed Time	0.0	644.6		h

Figure 236: Data screen 3.2.2 Counter

Since First Start-Up

This field shows the total energy consumption and the elapsed time since the first time the machine is started.

Since Last Reset

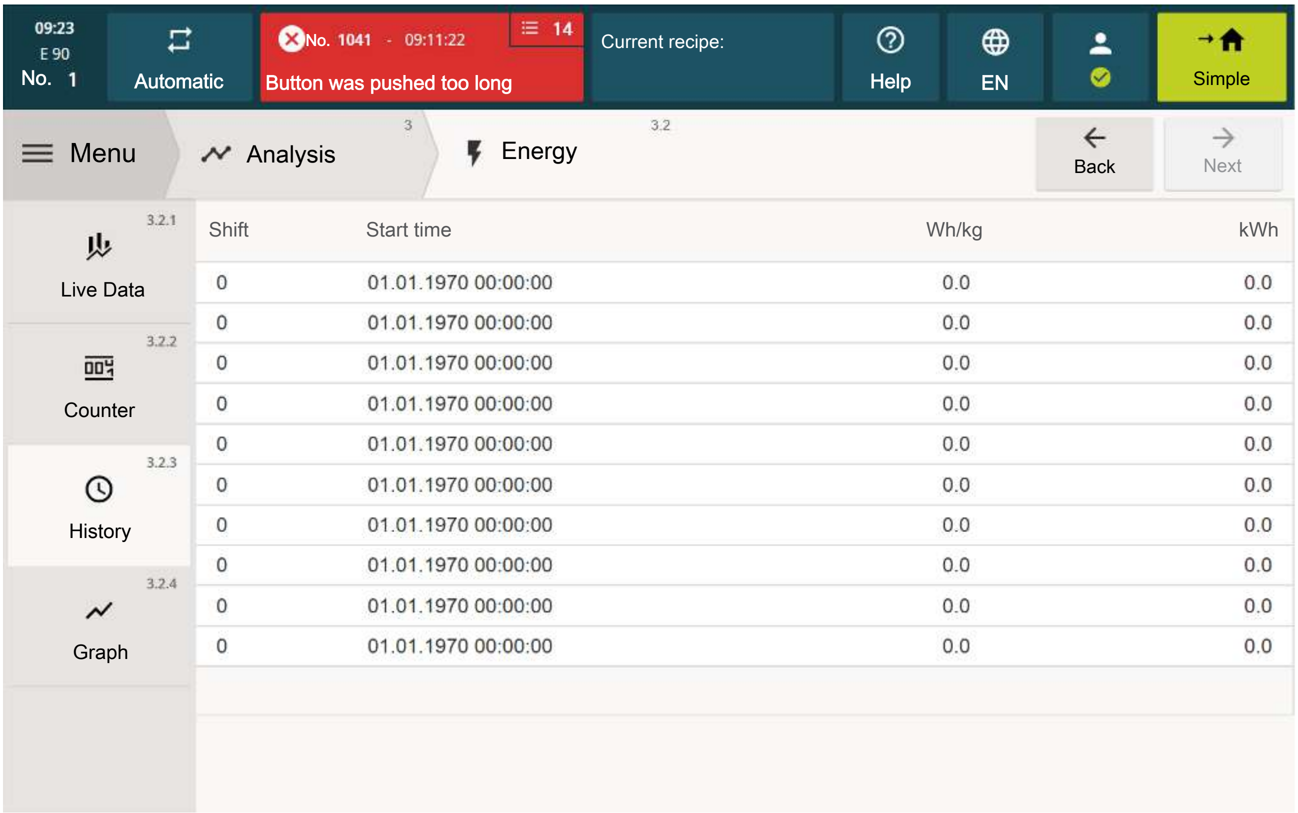
The field shows the total energy consumption and the elapsed time since the last reset of the values.

The values that show in this field can be reset with the key **Reset Now**.

Current shift

This field shows the total energy consumption and the elapsed time since the start of the current shift.

7.3.6.3 Data Screen 3.2.3 History


09:23
E 90
No. 1
Automatic
No. 1041 - 09:11:22
14
Current recipe:
Help
EN
Simple
Menu
Analysis
3
Energy
3.2
Back
Next
3.2.1
Live Data
3.2.2
Counter
3.2.3
History
3.2.4
Graph

Button was pushed too long

Shift	Start time	Wh/kg	kWh
0	01.01.1970 00:00:00	0.0	0.0
0	01.01.1970 00:00:00	0.0	0.0
0	01.01.1970 00:00:00	0.0	0.0
0	01.01.1970 00:00:00	0.0	0.0
0	01.01.1970 00:00:00	0.0	0.0
0	01.01.1970 00:00:00	0.0	0.0
0	01.01.1970 00:00:00	0.0	0.0
0	01.01.1970 00:00:00	0.0	0.0
0	01.01.1970 00:00:00	0.0	0.0
0	01.01.1970 00:00:00	0.0	0.0

Figure 237: Data screen 3.2.3 History

This data screen shows the history data of energy consumption.

7.3.6.4 Data Screen 3.2.4 Graph

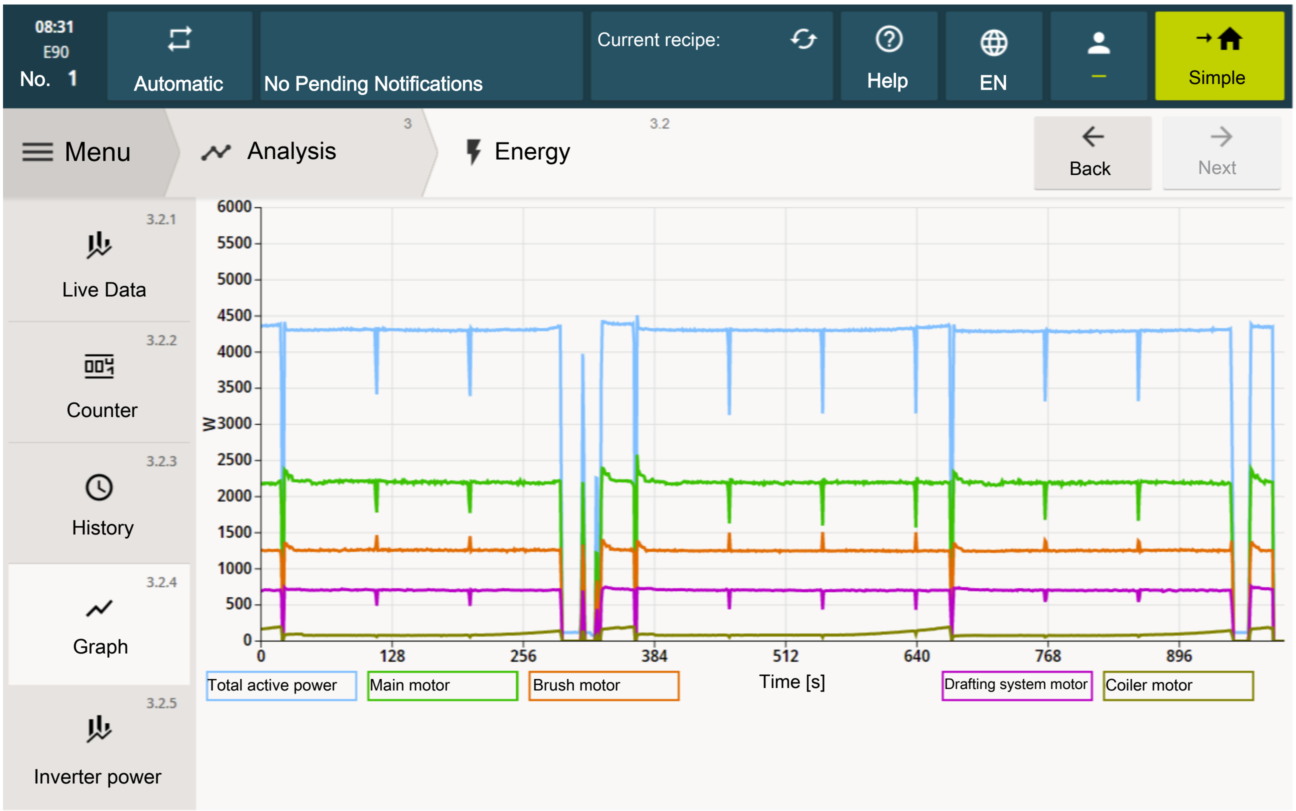
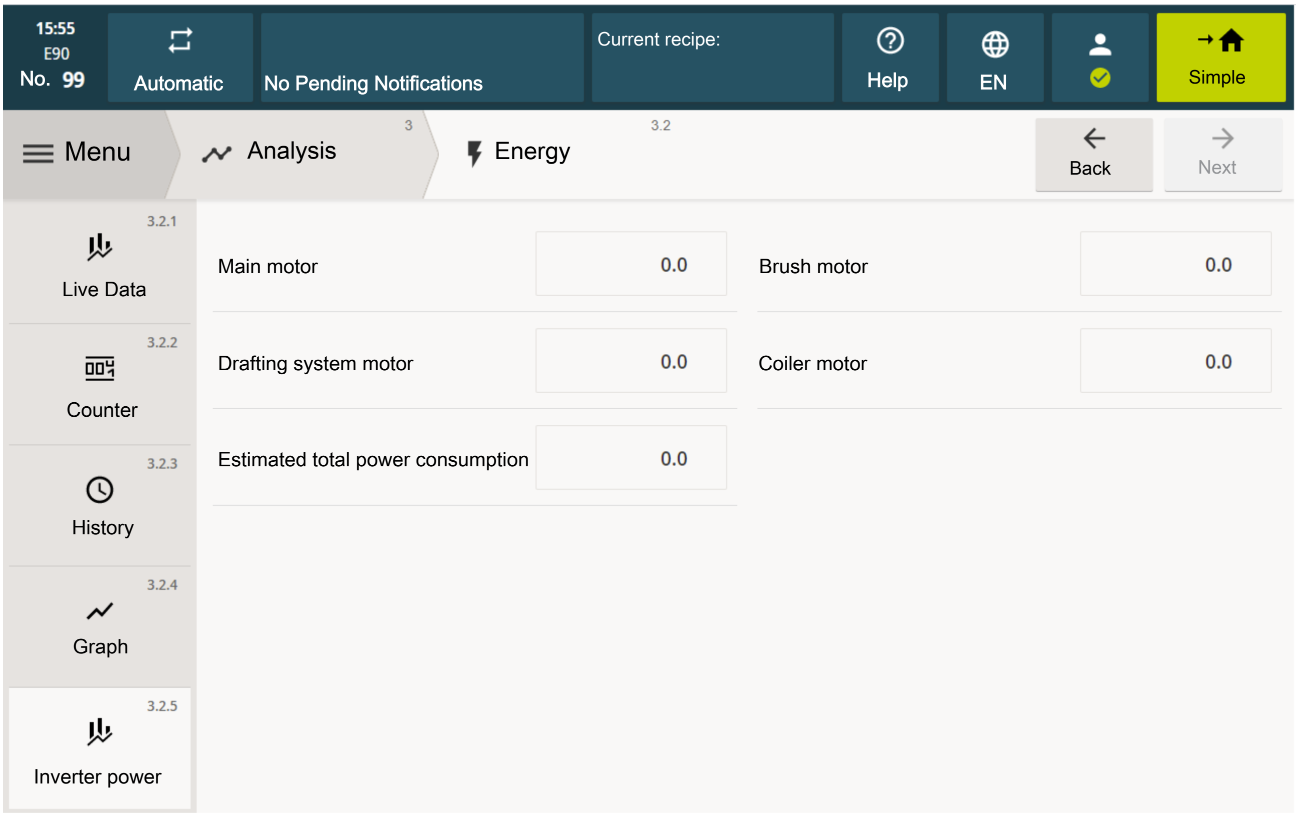

08:31
E90
No. 1
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Analysis
3
Energy
3.2
Back
Next
3.2.1
Live Data
3.2.2
Counter
3.2.3
History
3.2.4
Graph
3.2.5
Inverter power
6000
5500
5000
4500
4000
3500
W 3000
2500
2000
1500
1000
500
0
0
128
256
384
512
640
768
896
Time [s]
Total active power
Main motor
Brush motor
Drafting system motor
Coiler motor

Figure 238: Data screen 3.2.4 Graph

This graph shows the power consumption of the motors and the total power consumption.

7.3.6.5 Data Screen 3.2.5 Inverter Power

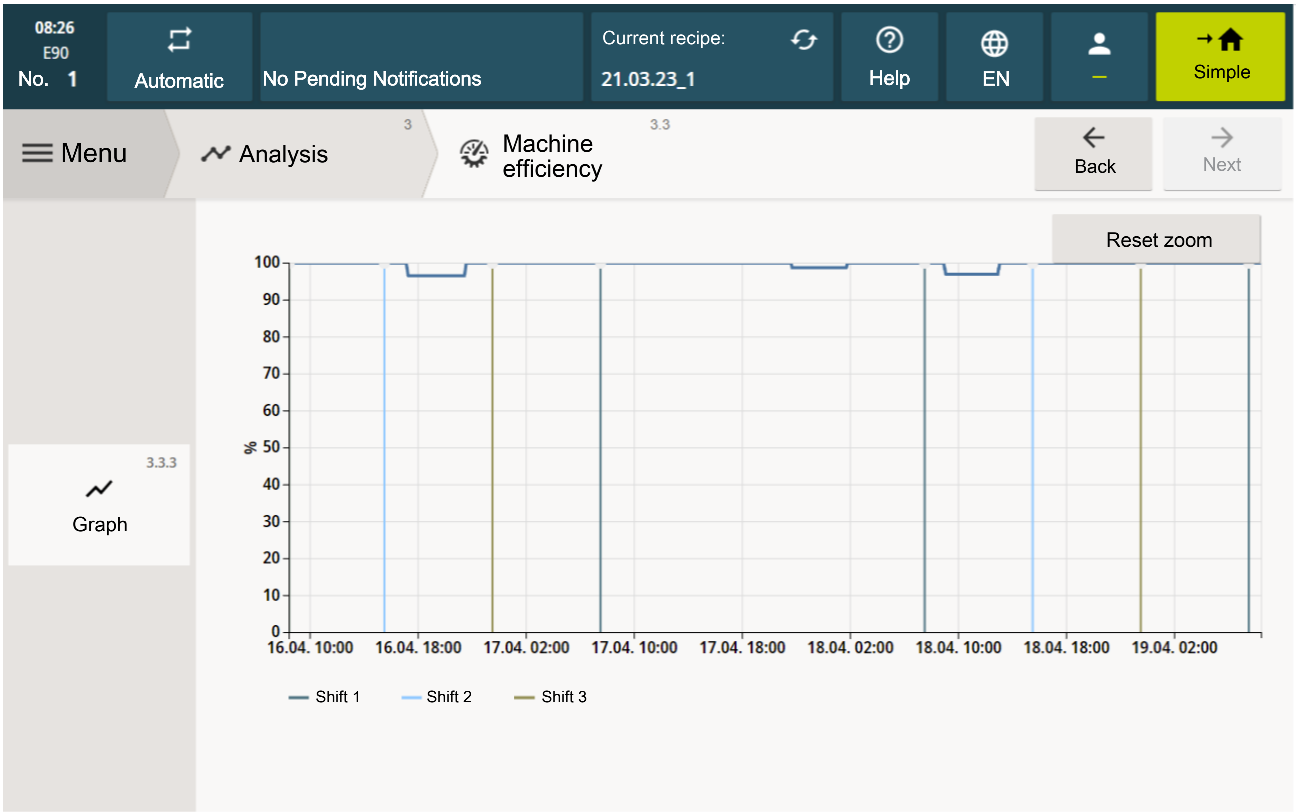

15:55
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
3
Analysis
3.2
Energy
Back
Next
3.2.1
Live Data
3.2.2
Counter
3.2.3
History
3.2.4
Graph
3.2.5
Inverter power

Main motor	0.0	Brush motor	0.0
Drafting system motor	0.0	Coiler motor	0.0
Estimated total power consumption	0.0		

Figure 239: Data screen 3.2.5 Inverter power

This graph shows the power consumption of the motors and the total power consumption. The graph of the data can be seen in data screen 3.2.4.

7.3.6.6 Data Screen 3.3.3 Machine Efficiency Graph


08:26
E90
No. 1
Automatic
Help
EN
Simple
Menu
3
Analysis
3.3
Machine efficiency
Back
Next
3.3.3
Graph
Reset zoom
%
100
90
80
70
60
50
40
30
20
10
0
16.04. 10:00
16.04. 18:00
17.04. 02:00
17.04. 10:00
17.04. 18:00
18.04. 02:00
18.04. 10:00
18.04. 18:00
19.04. 02:00
Shift 1
Shift 2
Shift 3

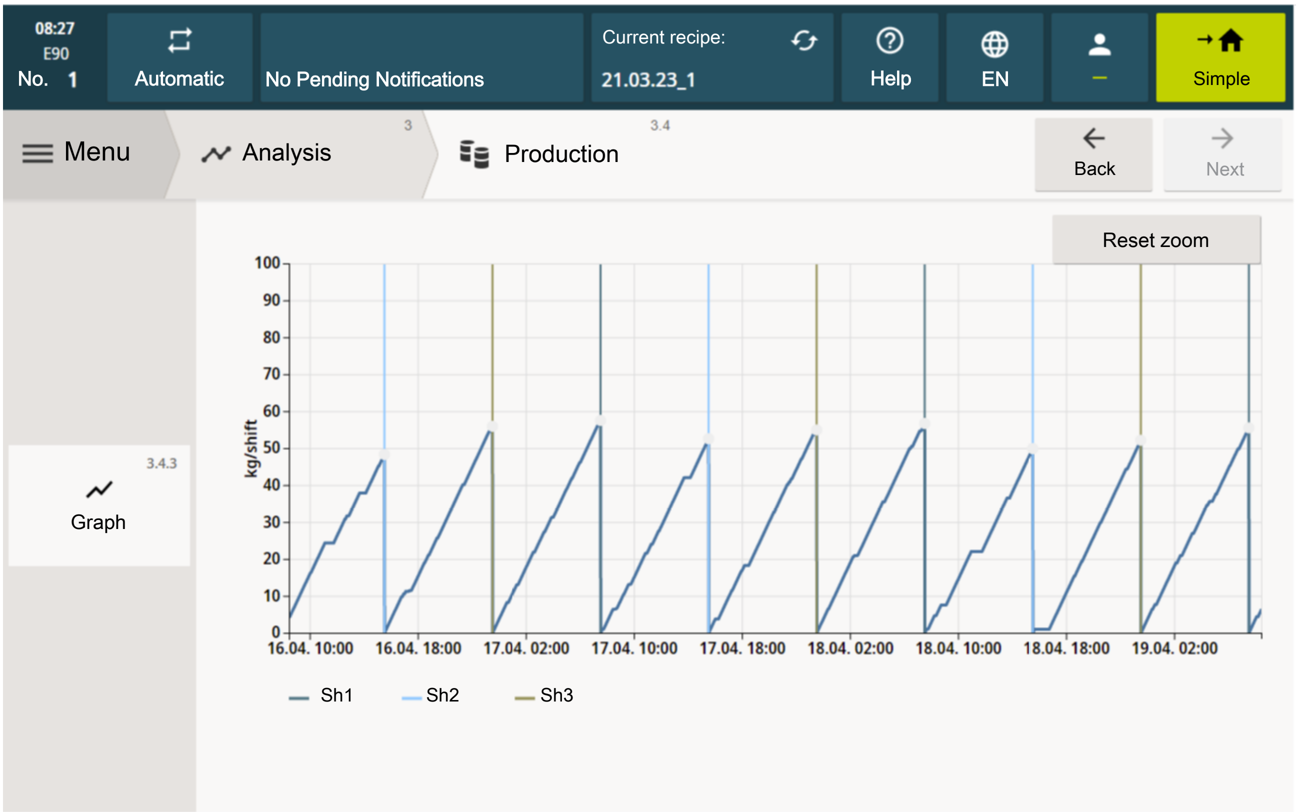
No Pending Notifications

Current recipe: 21.03.23_1

Figure 240: Data screen 3.3.3 Machine efficiency graph

This graph shows the machine efficiency for different shits.

7.3.6.7 Data Screen 3.4.3 Production Graph



08:27
E90
No. 1

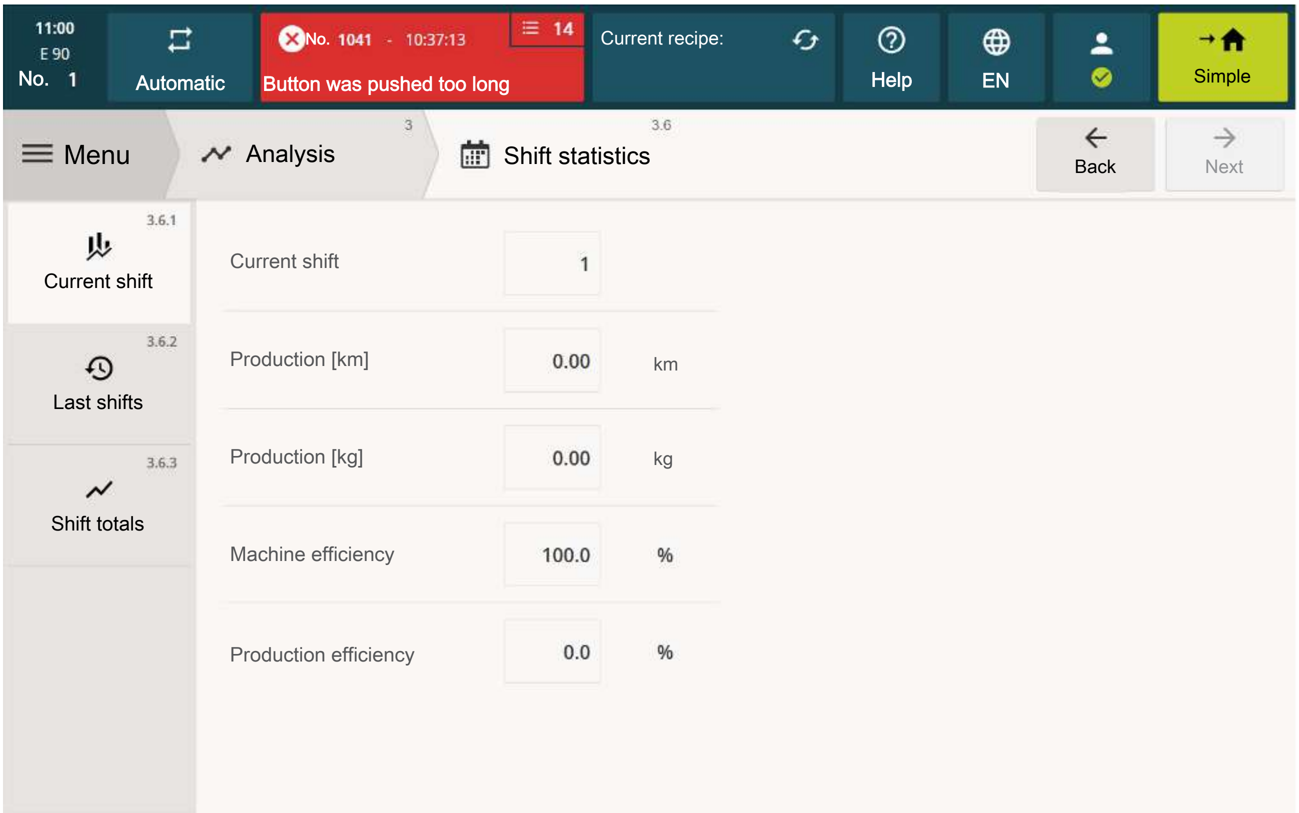
Current recipe:
21.03.23_1

Automatic
No Pending Notifications
Help
EN
Simple
Menu
Analysis
3
Production
3.4
Back
Next
3.4.3
Graph
Reset zoom
kg/shift
100
90
80
70
60
50
40
30
20
10
0
16.04. 10:00
16.04. 18:00
17.04. 02:00
17.04. 10:00
17.04. 18:00
18.04. 02:00
18.04. 10:00
18.04. 18:00
19.04. 02:00
Sh1
Sh2
Sh3

Figure 241: Data screen 3.4.3 Production graph

This graph shows the machine production for different shifts in last 3 days.

7.3.6.8 Data Screen 3.6.1 Current Shift


11:00
E 90
No. 1
Automatic
14
Current recipe:
Help
EN
Simple
Menu
Analysis
3
Shift statistics
3.6
Back
Next
3.6.1
Current shift
3.6.2
Last shifts
3.6.3
Shift totals

No. 1041 - 10:37:13
Button was pushed too long

Current shift 1
Production [km] 0.00 km
Production [kg] 0.00 kg
Machine efficiency 100.0 %
Production efficiency 0.0 %

Figure 242: Data screen 3.6.1 Current shift

Current shift

This field shows the current shift number. The number of the shifts in each 24 h can be set on the data screen 8.2.1.

Production [km]

This field shows the length of the made sliver.

Production [kg]

It shows the weight of the made sliver.

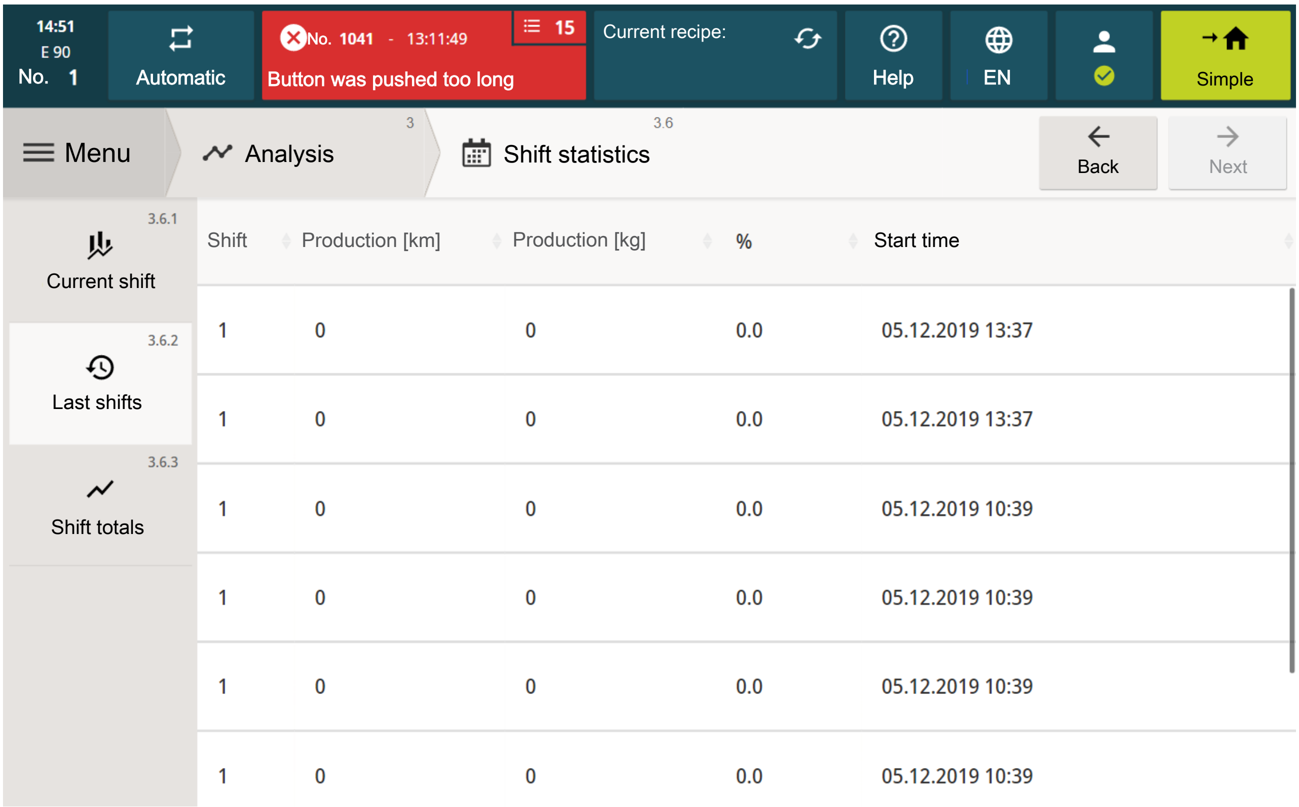
Machine efficiency

This field shows the average machine efficiency of the current shift.

Production efficiency

This field shows the average production efficiency of the current shift.

7.3.6.9 Data Screen 3.6.2 Last Shifts


14:51
E 90
No. 1
Automatic
No. 1041 - 13:11:49
15
Current recipe:
Help
EN
Simple
Menu
3
Analysis
3.6
Shift statistics
Back
Next
3.6.1
Current shift
3.6.2
Last shifts
3.6.3
Shift totals

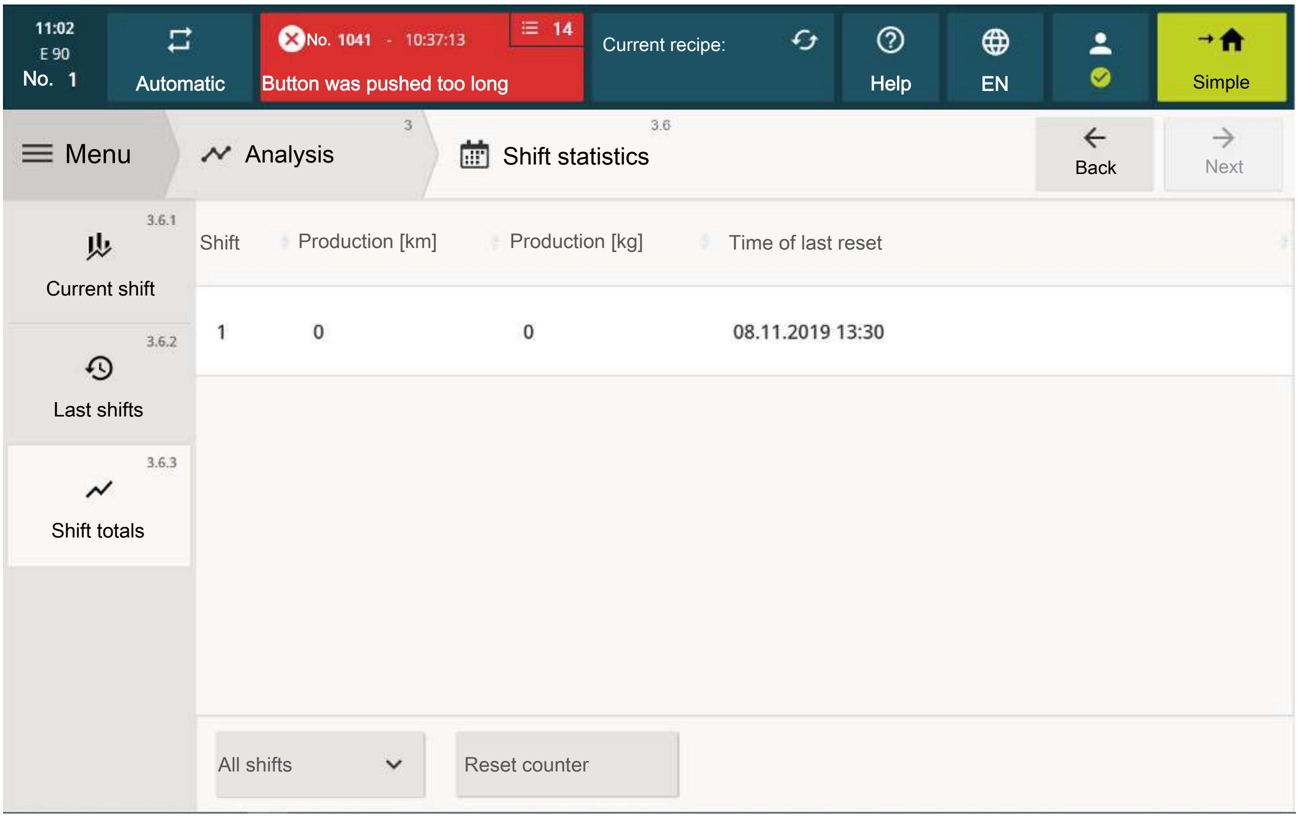
Button was pushed too long

Shift	Production [km]	Production [kg]	%	Start time
1	0	0	0.0	05.12.2019 13:37
1	0	0	0.0	05.12.2019 13:37
1	0	0	0.0	05.12.2019 10:39
1	0	0	0.0	05.12.2019 10:39
1	0	0	0.0	05.12.2019 10:39
1	0	0	0.0	05.12.2019 10:39

Figure 243: Data screen 3.6.2 Last shifts

This data screen shows the total production value, the total production efficiency, and the start time of the last 8 shifts.

7.3.6.10 Data Screen 3.6.3 Shift Totals


11:02
E 90
No. 1
Automatic
14
Current recipe:
Help
EN
Simple
Menu
3
Analysis
3.6
Shift statistics
Back
Next
3.6.1
Current shift
3.6.2
Last shifts
3.6.3
Shift totals
All shifts
Reset counter

No. 1041 - 10:37:13
Button was pushed too long

Shift	Production [km]	Production [kg]	Time of last reset
1	0	0	08.11.2019 13:30

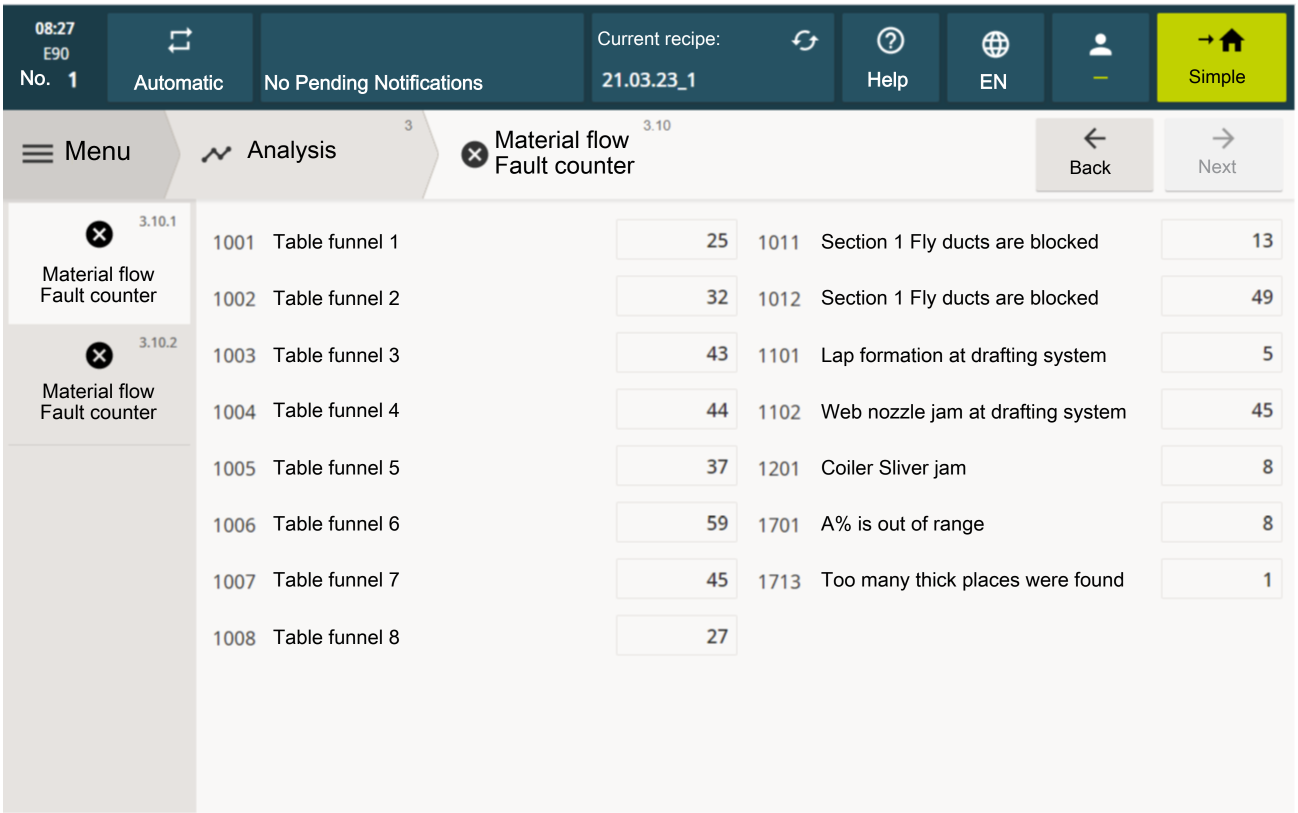
Figure 244: Data screen 3.6.3 Shift totals

This data screen shows the total production history of the selected shift and the production reset time.

All shifts data or a particular shift data can be shifted to show on the data screen with the key **All shifts**.

The total production values of the shifts that are shown on the data screen can be reset with the key **Reset counter**

7.3.6.11 Data Screen 3.10 Material Flow Fault Counter

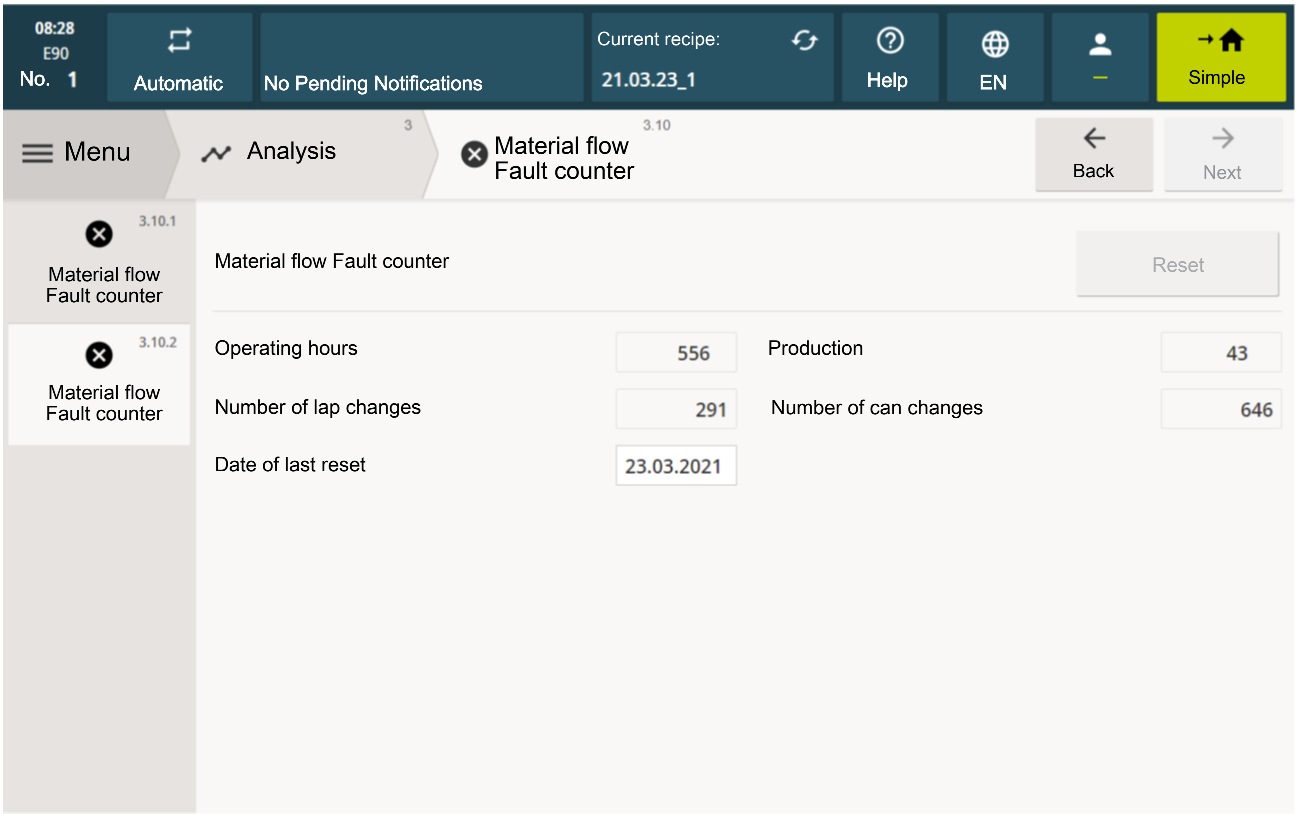

08:27
E90
No. 1
Automatic
No Pending Notifications
Help
EN
–
Simple
Menu
Analysis
3
Material flow Fault counter
3.10
Back
Next
3.10.1
Material flow Fault counter
3.10.2
Material flow Fault counter

Current recipe: 21.03.23_1

1001	Table funnel 1	25	1011	Section 1 Fly ducts are blocked	13
1002	Table funnel 2	32	1012	Section 1 Fly ducts are blocked	49
1003	Table funnel 3	43	1101	Lap formation at drafting system	5
1004	Table funnel 4	44	1102	Web nozzle jam at drafting system	45
1005	Table funnel 5	37	1201	Coiler Sliver jam	8
1006	Table funnel 6	59	1701	A% is out of range	8
1007	Table funnel 7	45	1713	Too many thick places were found	1
1008	Table funnel 8	27			

Figure 245: Data screen 3.10.1 Material flow Fault counter

The data screen 3.10.1 gives the number of occurrences for the fault code that is shown in the figure above. The counters can be reset with the button in data screen 3.10.2.


08:28
E90
No. 1
Automatic
No Pending Notifications
Current recipe:
21.03.23_1
Help
EN
Simple
Menu
Analysis
3
3.10
Material flow Fault counter
Back
Next
3.10.1
Material flow Fault counter
3.10.2
Material flow Fault counter
Reset

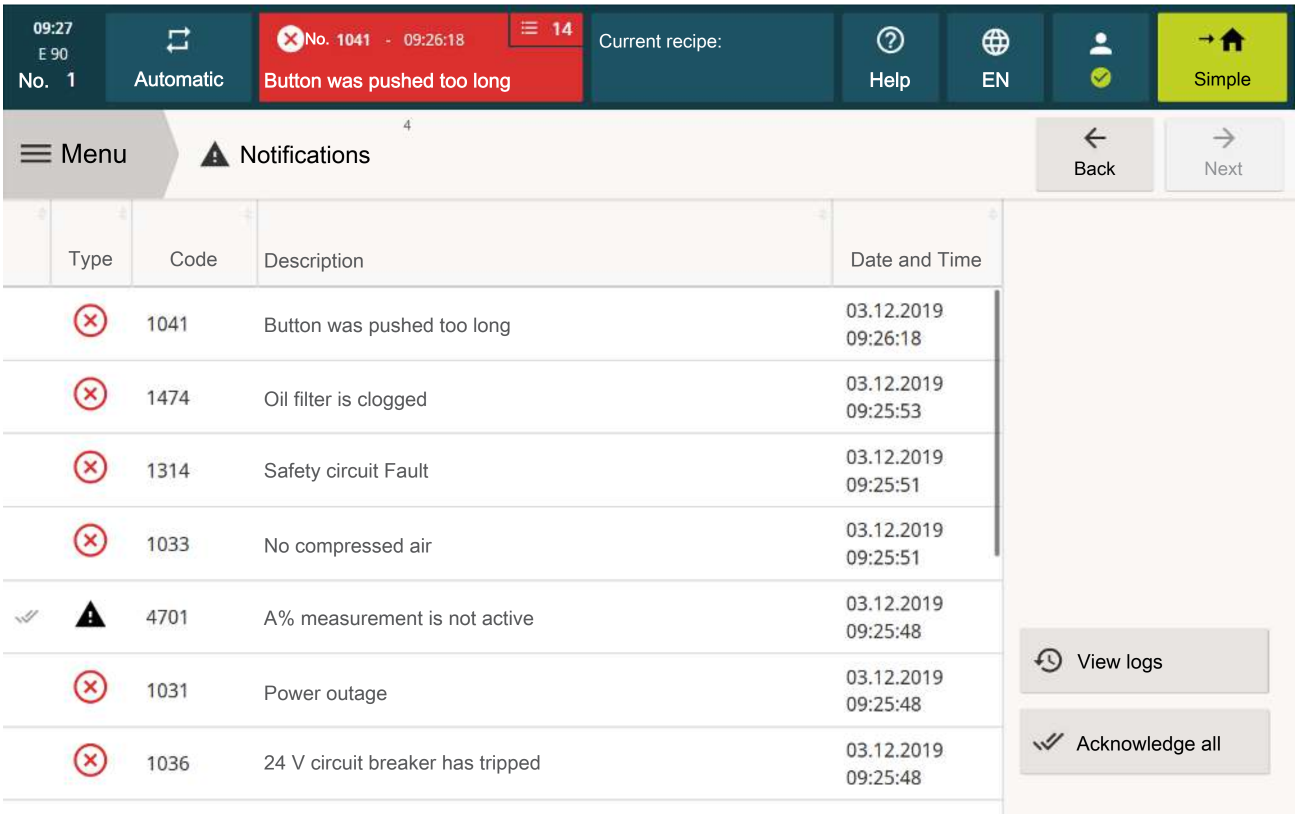
Material flow Fault counter

Operating hours	556	Production	43
Number of lap changes	291	Number of can changes	646
Date of last reset	23.03.2021		

Figure 246: Data screen 3.10.2 Material flow Fault counter

The data screen 3.10.2 gives some basic operation data. These operation data are possible to be reset.

7.3.7 Data Screen 4 Notifications


09:27
E 90
No. 1
Automatic
Help
EN
Simple
Menu
Notifications
4
Back
Next
View logs
Acknowledge all

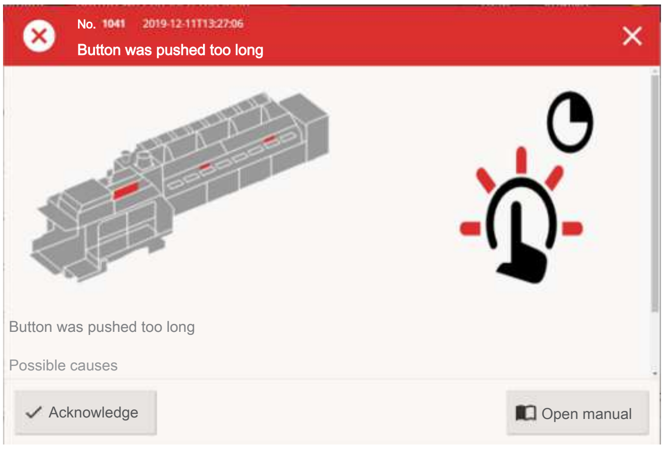
No. 1041 - 09:26:18 ☰ 14
Button was pushed too long

Current recipe:

	Type	Code	Description	Date and Time
	⊗	1041	Button was pushed too long	03.12.2019 09:26:18
	⊗	1474	Oil filter is clogged	03.12.2019 09:25:53
	⊗	1314	Safety circuit Fault	03.12.2019 09:25:51
	⊗	1033	No compressed air	03.12.2019 09:25:51
✓✓	▲	4701	A% measurement is not active	03.12.2019 09:25:48
	⊗	1031	Power outage	03.12.2019 09:25:48
	⊗	1036	24 V circuit breaker has tripped	03.12.2019 09:25:48

Figure 247: Data screen 4 Notifications

If a notification becomes tapped, a window as follows comes into view. The window contains a fault location graphic, a fault icon, the fault cause, and the solution. The fault can be acknowledged and the operation manual can be opened with the keys in this window.


Acknowledge
Open manual

No. 1041 2019-12-11T13:27:06
Button was pushed too long

Button was pushed too long

Possible causes

Figure 248: Fault window

The notifications of faults or warnings that the machine ever had have the 3 statuses that follow:

- If the related fault is fixed, the notification goes out of view by when the key **Acknowledge** is tapped.
- If the fault is fixed but is not acknowledged with the key, a clock symbol is shown in front of the notification.
- If the fault is not fixed, no symbol is shown in front of the related notification.

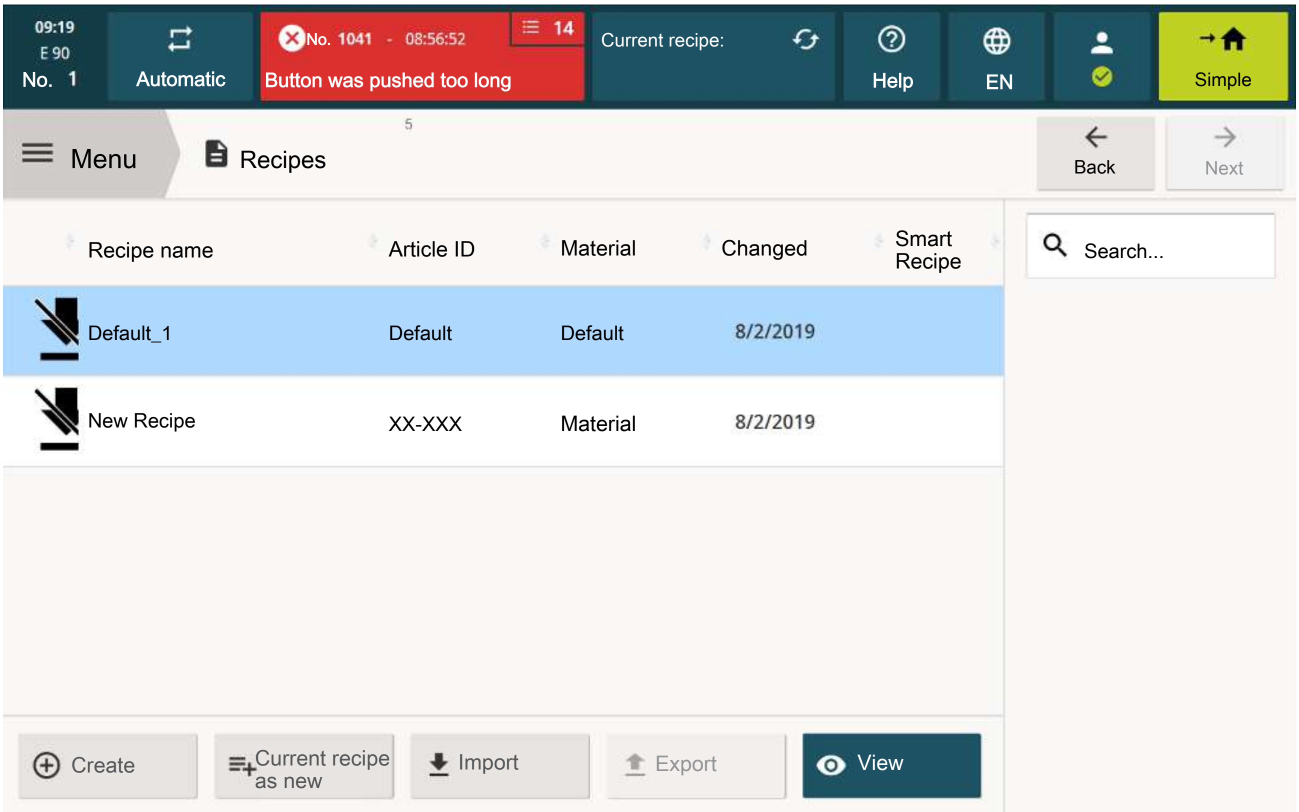
Key: View logs

To see all faults and warnings that the machine ever had, the key is to be tapped.

Key: Acknowledge all

If the related faults or warnings are fixed, all the notification cans be removed with this key.

7.3.8 Data Screen 5 Recipes


09:19
E 90
No. 1
Automatic
14
Current recipe:
Help
EN
Simple
5
Menu
Recipes
Back
Next
Search...
Create
Current recipe as new
Import
Export
View

No. 1041 - 08:56:52
Button was pushed too long

Recipe name	Article ID	Material	Changed	Smart Recipe
Default_1	Default	Default	8/2/2019	
New Recipe	XX-XXX	Material	8/2/2019	

Figure 249: Data screen 5 Recipes

This data screen shows the history information of the recipes. A quick search can be done with entering the key words of the recipe name, article ID, or material.

Key: Create

A new recipe can be made from the default values with this key.

Key: Current recipe as new

A new recipe can be made based on the current settings with this key.

Key: Import

The recipes can be imported. When the key is tapped, the dialog **Data Import** is shown.

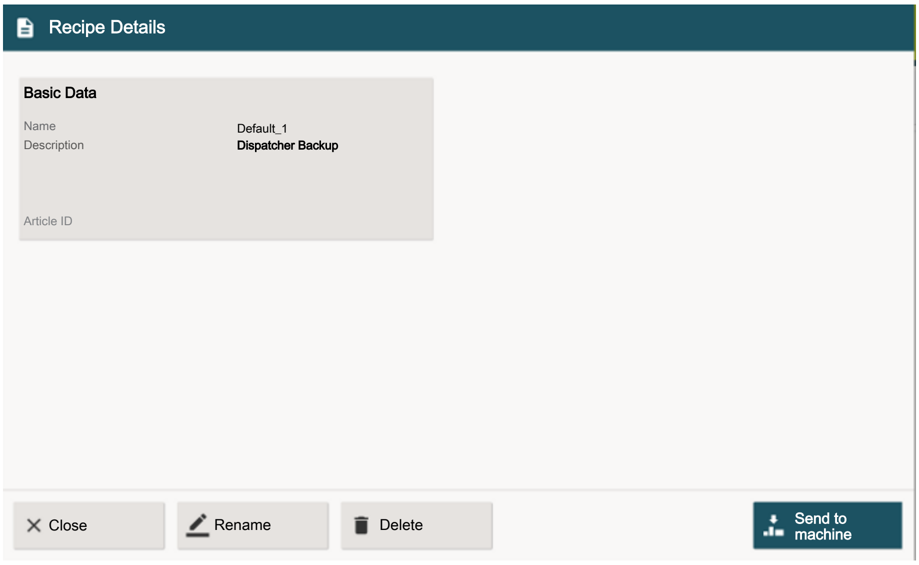
Key: Export

The recipes can be exported. When the key is tapped, the dialog **Data Export** is shown.

Key: View

If the key **View**is tapped, the window **Recipe Details** is shown.

The selected recipe can be renamed or deleted with the keys in the window **Recipe Details**.



Recipe Details

Basic Data

Name Default_1

Description Dispatcher Backup

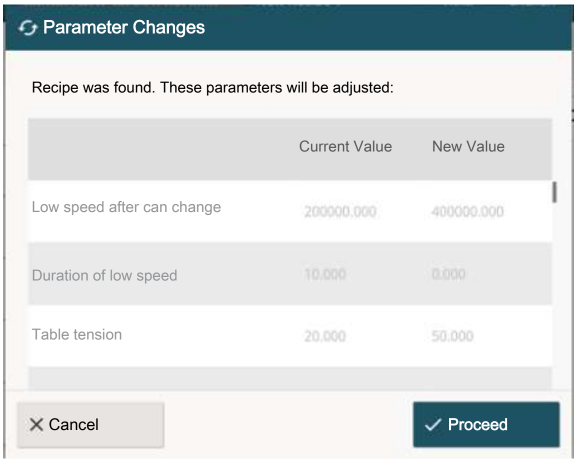
Article ID

Figure 250: Data screen Recipe Details

Key: Send to machine The selected recipe can be sent to the machine as current recipe with the key.

If the key **Send to machine** is tapped, the windows that follows are possible to be shown:

- If a parameter changes, the window **Parameter Changes** is shown. If the parameter changes that is shown is accepted, the procedure can continued if the key **Proceed** is tapped.

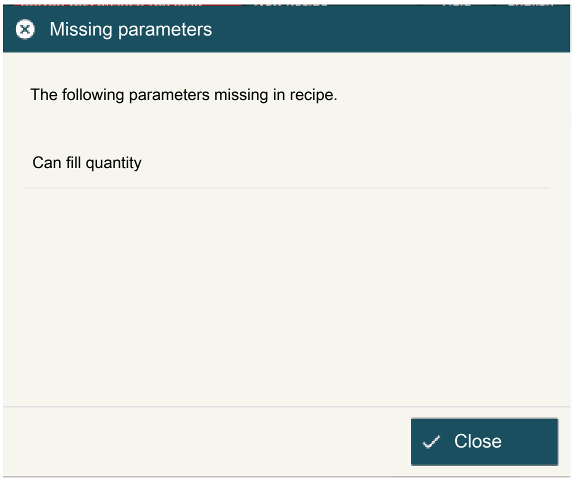


Recipe was found. These parameters will be adjusted:

	Current Value	New Value
Low speed after can change	200000.000	400000.000
Duration of low speed	10.000	0.000
Table tension	20.000	50.000

Figure 251: Parameter changes_1

- If a parameter is missing, the window **Missing parameters** comes into view.

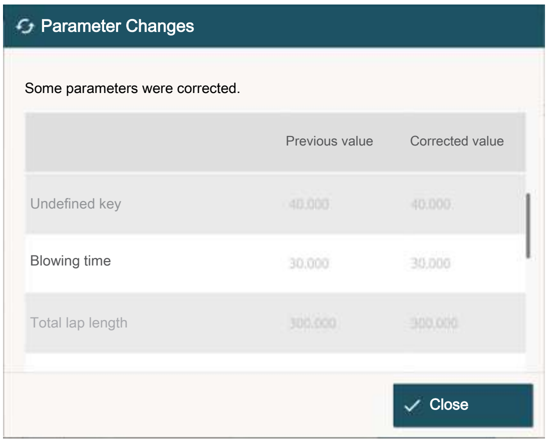


The following parameters missing in recipe.

Can fill quantity

Figure 252: Missing parameters

- If a mechanical setting is necessary, the window **Mechanical adjustment requested** comes into view.
- If all windows that were shown before are gone through, the window **Parameter Changes** comes into view.



Parameter Changes

Some parameters were corrected.

	Previous value	Corrected value
Undefined key	40.000	40.000
Blowing time	30.000	30.000
Total lap length	300.000	300.000

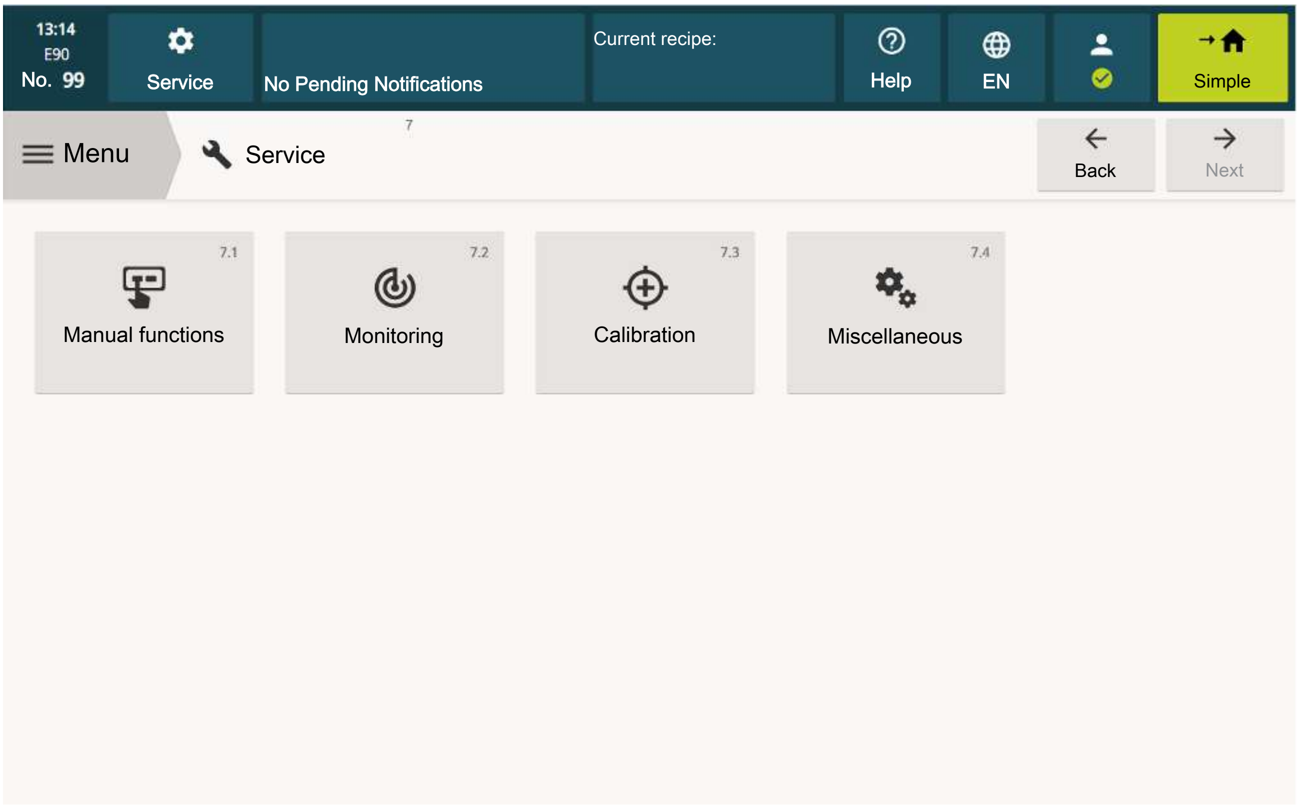
Figure 253: Parameter changes_2

To complete the procedure, the key **Close** is to be tapped.

7.3.9 Data Screen 7 Service

This section contains the information about functions in the service mode.

The functions in this section can be used if the operation mode is set to service mode.

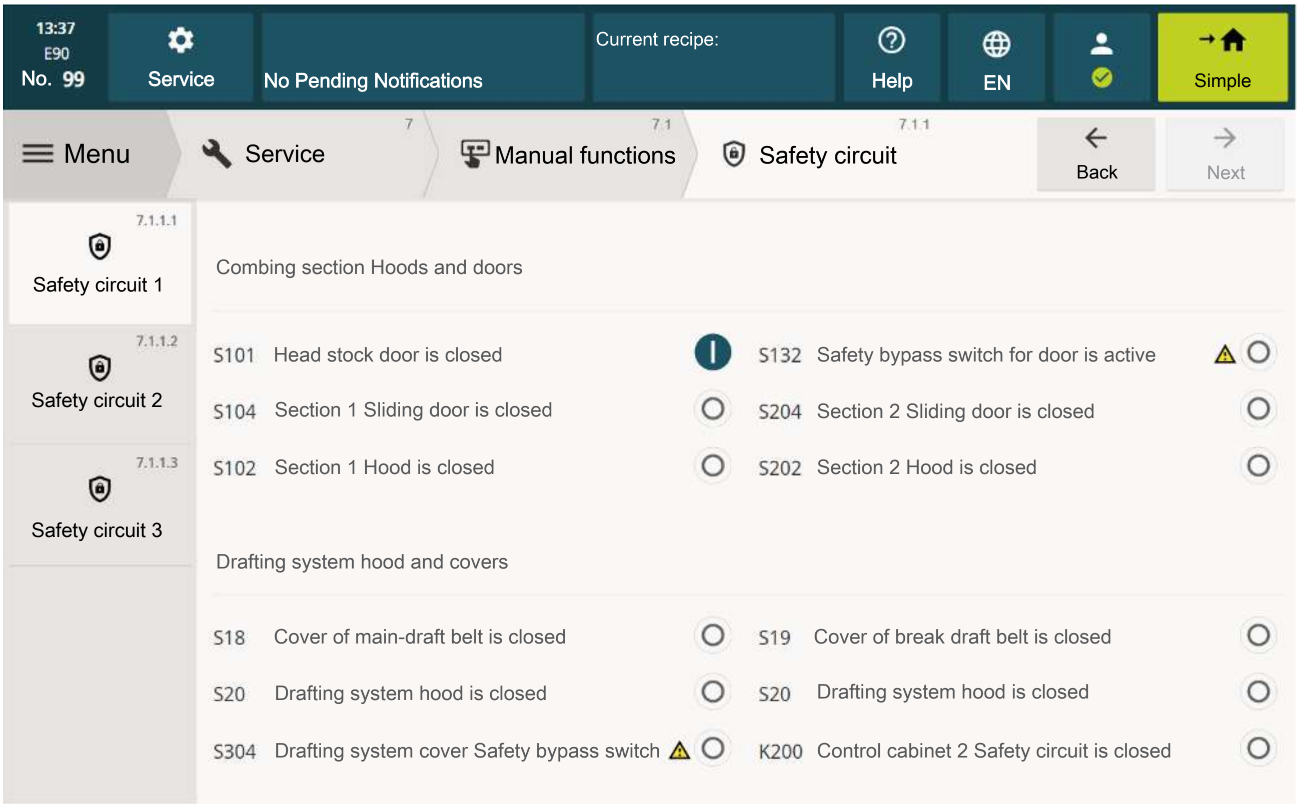


13:14
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
Back
Next
7.1
Manual functions
7.2
Monitoring
7.3
Calibration
7.4
Miscellaneous

Figure 254: Data screen 7 Service

Status Indicator

Status Indicator Symbol	Description
Green symbol ●	Status: Activated Green symbol is always corresponding to the software text. Example: In the below data screen 7.1.1.1, the sensor S101 is green symbol, that means now the head stock door is closed.
Grey symbol ○	Status: Deactivated Grey symbol is not corresponding to the software text. Example: In the below data screen 7.1.1.1, the sensor S104 is grey symbol, that means the section 1 sliding door is now not closed.
Warning symbol ⚠	The status is inverted to the electrical signal. Usually the green symbol means that 24 V is applied to the input. With this waning symbol, the green symbol means 0 V is applied to the input.


13:37
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
Manual functions
7.1
Safety circuit
7.1.1
Back
Next
7.1.1.1
Safety circuit 1
7.1.1.2
Safety circuit 2
7.1.1.3
Safety circuit 3

Combing section Hoods and doors

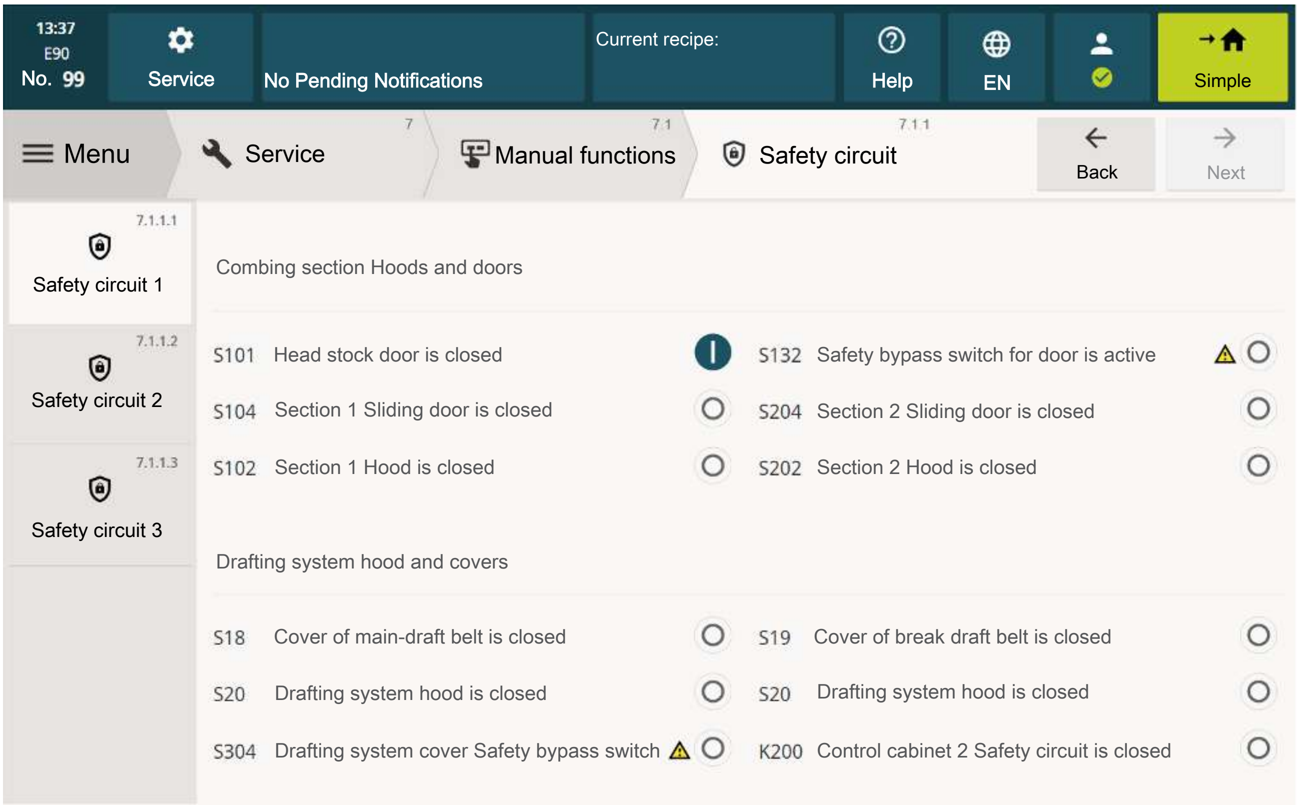
S101	Head stock door is closed	●	S132	Safety bypass switch for door is active	⚠ ○
S104	Section 1 Sliding door is closed	○	S204	Section 2 Sliding door is closed	○
S102	Section 1 Hood is closed	○	S202	Section 2 Hood is closed	○

Drafting system hood and covers

S18	Cover of main-draft belt is closed	○	S19	Cover of break draft belt is closed	○
S20	Drafting system hood is closed	○	S20	Drafting system hood is closed	○
S304	Drafting system cover Safety bypass switch	⚠ ○	K200	Control cabinet 2 Safety circuit is closed	○

Figure 255: Data screen 7.1.1.1 Safety circuit 1

7.3.9.1 Data Screen 7.1.1.1 Safety Circuit 1


13:37
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.1
Safety circuit
Back
Next
7.1.1.1
Safety circuit 1
7.1.1.2
Safety circuit 2
7.1.1.3
Safety circuit 3

Combing section Hoods and doors

S101	Head stock door is closed	●	S132	Safety bypass switch for door is active	⚠ ○
S104	Section 1 Sliding door is closed	○	S204	Section 2 Sliding door is closed	○
S102	Section 1 Hood is closed	○	S202	Section 2 Hood is closed	○

Drafting system hood and covers

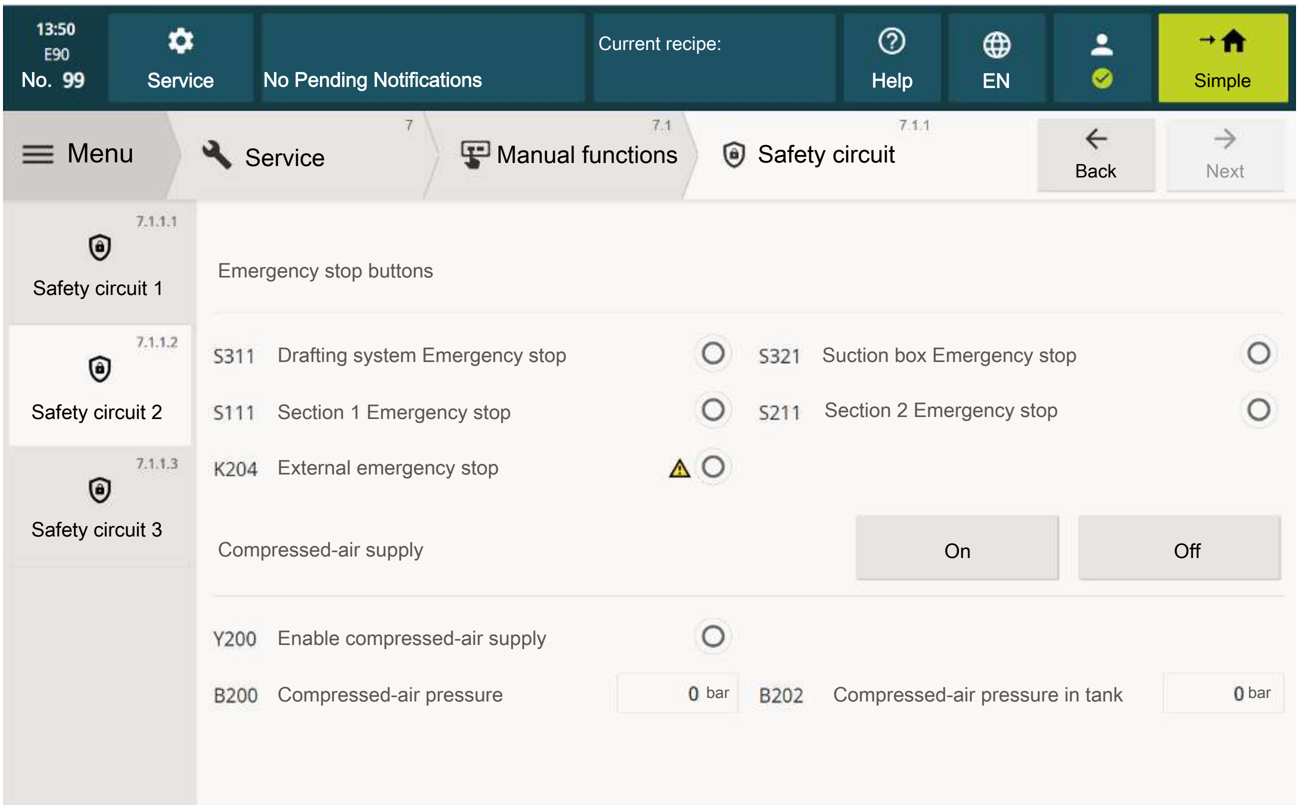
S18	Cover of main-draft belt is closed	○	S19	Cover of break draft belt is closed	○
S20	Drafting system hood is closed	○	S20	Drafting system hood is closed	○
S304	Drafting system cover Safety bypass switch ⚠	○	K200	Control cabinet 2 Safety circuit is closed	○

Figure 256: Data screen 7.1.1.1 Safety circuit 1

Combing positions 1- 8 are counted from the head stock to the delivery unit.

When the cover becomes closed or opened, the cover status indicators (*refer to ▸ 222*) on the data screen change accordingly.

7.3.9.2 Data Screen 7.1.1.2 Safety Circuit 2


13:50
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.1
Safety circuit
Back
Next
7.1.1.1
Safety circuit 1
7.1.1.2
Safety circuit 2
7.1.1.3
Safety circuit 3
On
Off

Emergency stop buttons

S311 Drafting system Emergency stop ○

S321 Suction box Emergency stop ○

S111 Section 1 Emergency stop ○

S211 Section 2 Emergency stop ○

K204 External emergency stop ⚠ ○

Compressed-air supply

Y200 Enable compressed-air supply ○

B200 Compressed-air pressure 0 bar

B202 Compressed-air pressure in tank 0 bar

Figure 257: Data screen 7.1.1.2 Safety circuit 2

If the emergency stop button or the main air valve is on or off, the status indicators (*refer to* ▸ *222*) on the data screen change accordingly.

Emergency stop buttons

The machine has 4 emergency stop buttons (*refer to* ▸ *47*). The status of the emergency stop buttons is shown in the field.

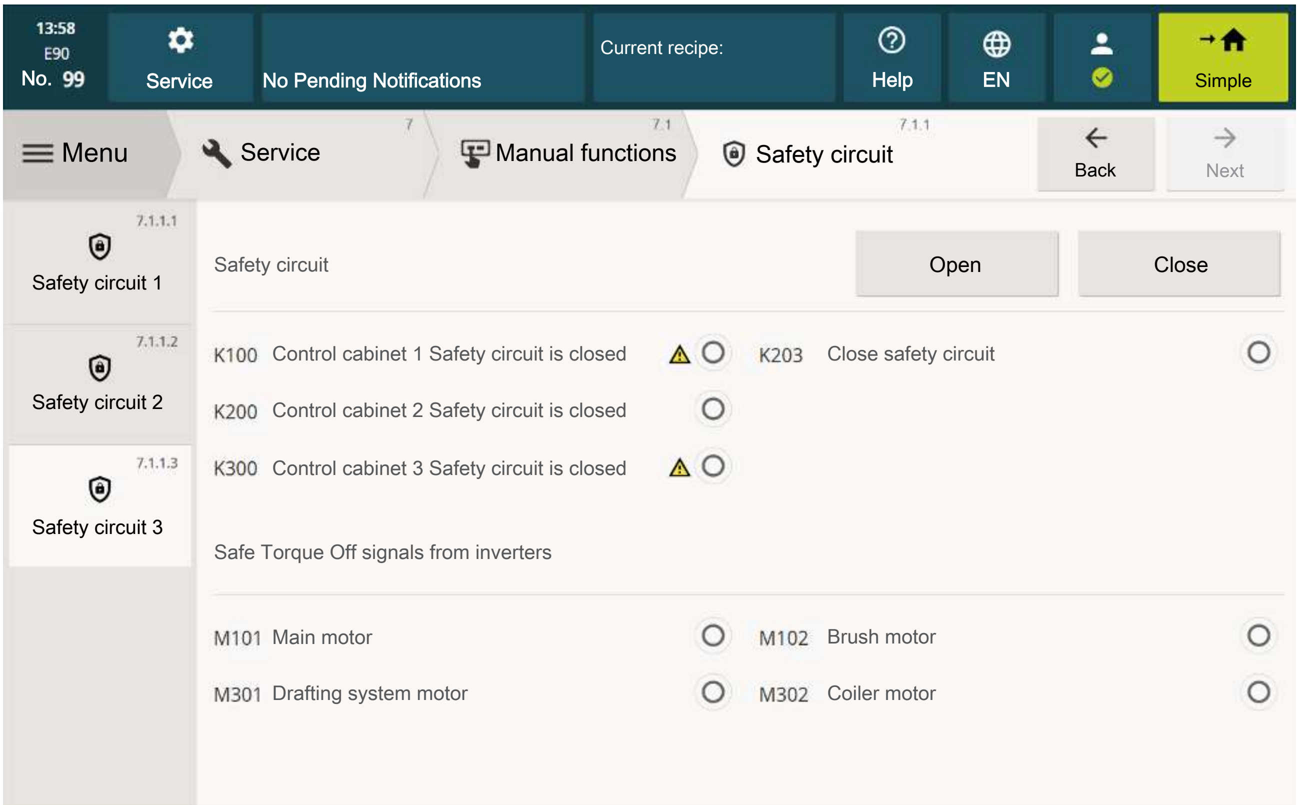
External emergency stop:

If an external part is assembled at the machine, the status of the emergency stop button of the external part can be checked in this field.

Compressed-air supply

The main valve Y200 can be tested if it reacts accordingly with the key **On** or the key **Off** . Thus, the user knows if the main valve works correctly or if the valve connection is good.

7.3.9.3 Data Screen 7.1.1.3 Safety Circuit 3


13:58
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.1
Safety circuit
Back
Next
7.1.1.1
Safety circuit 1
7.1.1.2
Safety circuit 2
7.1.1.3
Safety circuit 3
Open
Close

Safety circuit

K100 Control cabinet 1 Safety circuit is closed ⚠ ○

K200 Control cabinet 2 Safety circuit is closed ○

K300 Control cabinet 3 Safety circuit is closed ⚠ ○

K203 Close safety circuit ○

Safe Torque Off signals from inverters

M101 Main motor ○

M301 Drafting system motor ○

M102 Brush motor ○

M302 Coiler motor ○

Figure 258: Data screen 7.1.1.3 Safety circuit 3

The status indicators (*refer to* ▸ *222*) on the data screen is to be changed in accordance with the status of the safety circuit and the safety torque.

Safety circuit

To control the parameter K203 **Close safety circuit** , the key **Open** or **Close** is to be tapped.

The figure that follows shows the location of the related control cabinets.

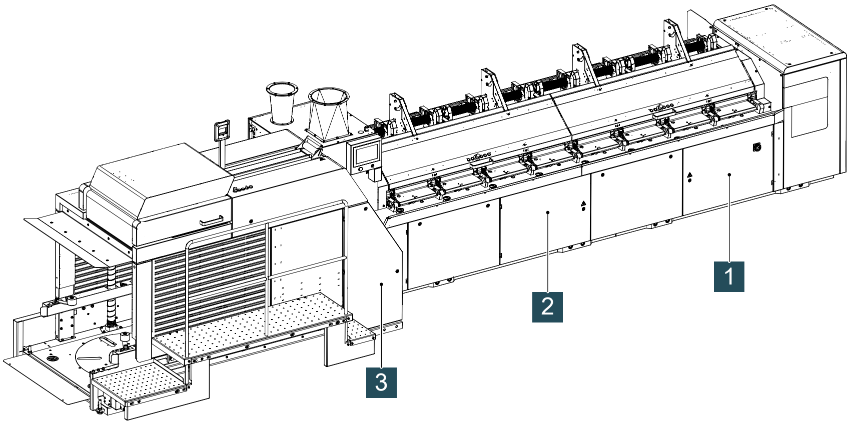


Figure 259: Control cabinet

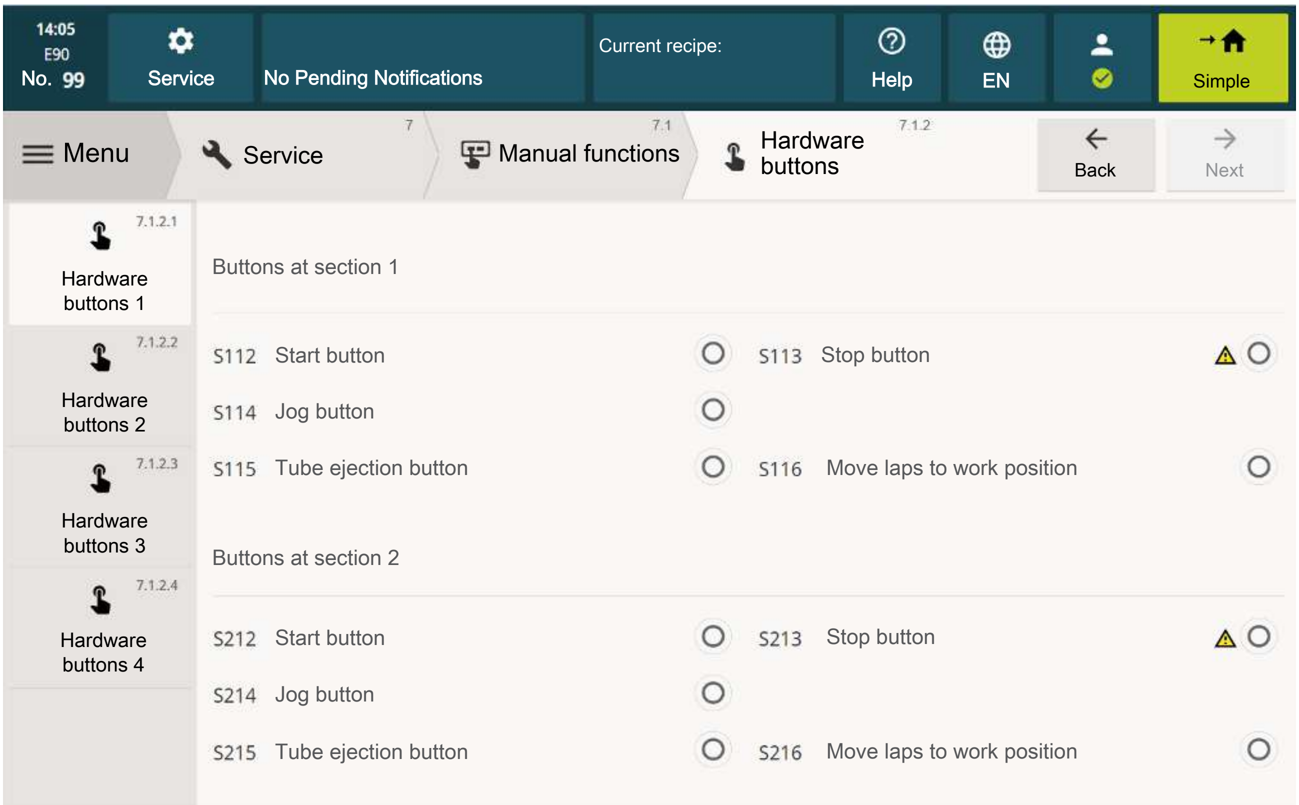
1	K100 Control cabinet 1	2	K200 Control cabinet 2
3	K300 Control cabinet 3		

Safe Torque Off signals from inverters

An open safety circuit triggers the ‘safe torque off’ function of the inverters.

The gearing layout of the machine contains more information on the motors (*refer to* ▸ *285*).

7.3.9.4 Data Screen 7.1.2.1 Hardware Buttons 1


14:05
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.2
Hardware buttons
Back
Next
7.1.2.1
Hardware buttons 1
7.1.2.2
Hardware buttons 2
7.1.2.3
Hardware buttons 3
7.1.2.4
Hardware buttons 4

Buttons at section 1

S112 Start button ○
S113 Stop button ⚠ ○
S114 Jog button ○
S115 Tube ejection button ○
S116 Move laps to work position ○

Buttons at section 2

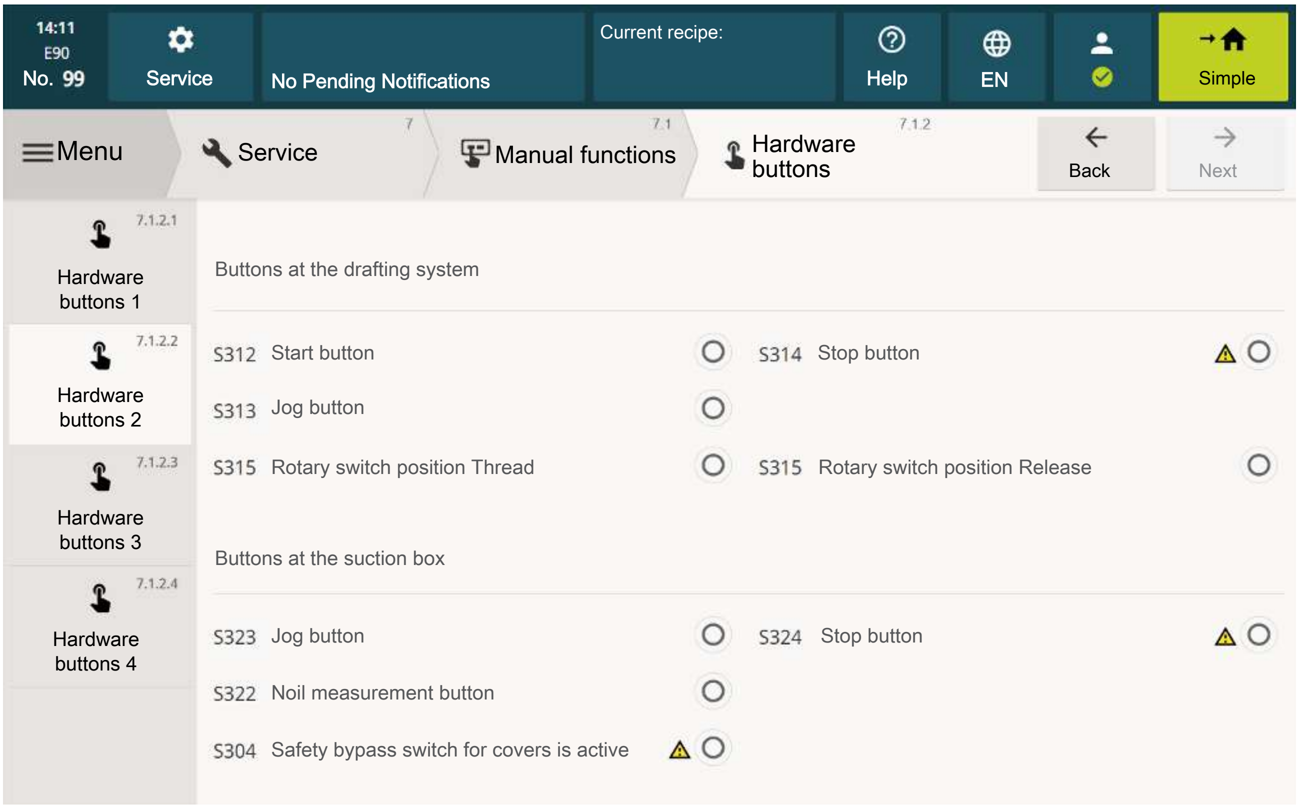
S212 Start button ○
S213 Stop button ⚠ ○
S214 Jog button ○
S215 Tube ejection button ○
S216 Move laps to work position ○

Figure 260: Data screen 7.1.2.1 Hardware buttons 1

Combing positions 1 - 8 are counted from the head stock to the delivery unit.

The machine has 2 groups of buttons at 2 combing sections (*refer to* ▸ *130*). If a button is activated or deactivated, the related status indicators (*refer to* ▸ *222*) change accordingly.

7.3.9.5 Data Screen 7.1.2.2 Hardware Buttons 2


14:11
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.2
Hardware buttons
Back
Next
7.1.2.1
Hardware buttons 1
7.1.2.2
Hardware buttons 2
7.1.2.3
Hardware buttons 3
7.1.2.4
Hardware buttons 4

Buttons at the drafting system

S312 Start button ○

S314 Stop button ⚠ ○

S313 Jog button ○

S315 Rotary switch position Thread ○

S315 Rotary switch position Release ○

Buttons at the suction box

S323 Jog button ○

S324 Stop button ⚠ ○

S322 Noil measurement button ○

S304 Safety bypass switch for covers is active ⚠ ○

Figure 261: Data screen 7.1.2.2 Hardware buttons 2

The machine has 2 groups of buttons at the delivery unit (*refer to* ▸ *130*).

If a button is activated or deactivated, the related status indicators (*refer to* ▸ *222*) change accordingly.

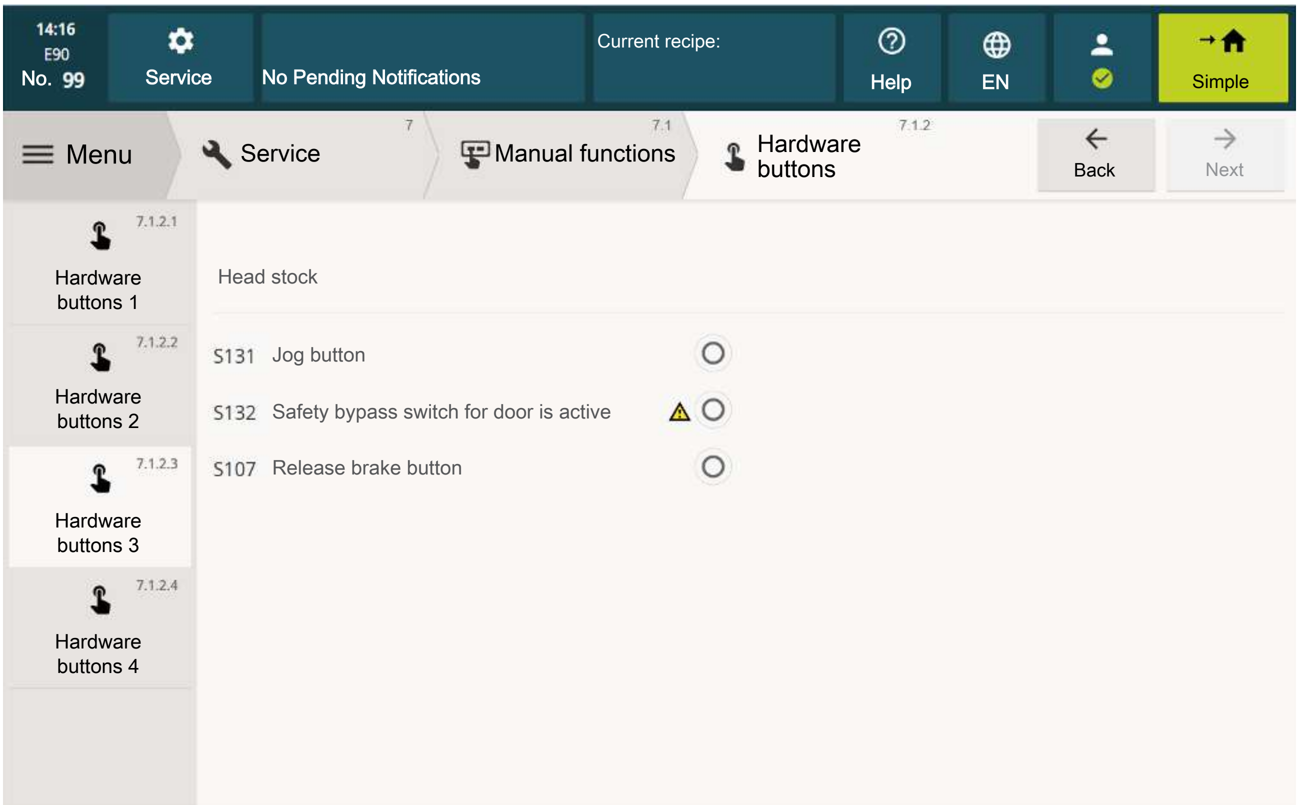
Buttons at the drafting system

The rotary switch at the drafting system hood (*refer to* ▸ *132*) controls the functions of the parameters **Rotary switch position Thread** and **Rotary switch position Release**.

Buttons at the suction box

The key switch at the operating unit (*refer to* ▸ *133*) controls the function of the parameter **Safety bypass switch for covers is active**.

7.3.9.6 Data Screen 7.1.2.3 Hardware Buttons 3


14:16
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
Manual functions
7.1
Hardware buttons
7.1.2
Back
Next
7.1.2.1
Hardware buttons 1
7.1.2.2
Hardware buttons 2
7.1.2.3
Hardware buttons 3
7.1.2.4
Hardware buttons 4

Head stock

S131 Jog button ○

S132 Safety bypass switch for door is active ⚠ ○

S107 Release brake button ○

Figure 262: Data screen 7.1.2.3 Hardware buttons 3

The machine has 3 buttons at the head stock (*refer to ▸ 38*).

If the button is activated or deactivated, the related status indicators (*refer to ▸ 222*) change accordingly.

7.3.9.7 Data Screen 7.1.2.4 Hardware Buttons 4

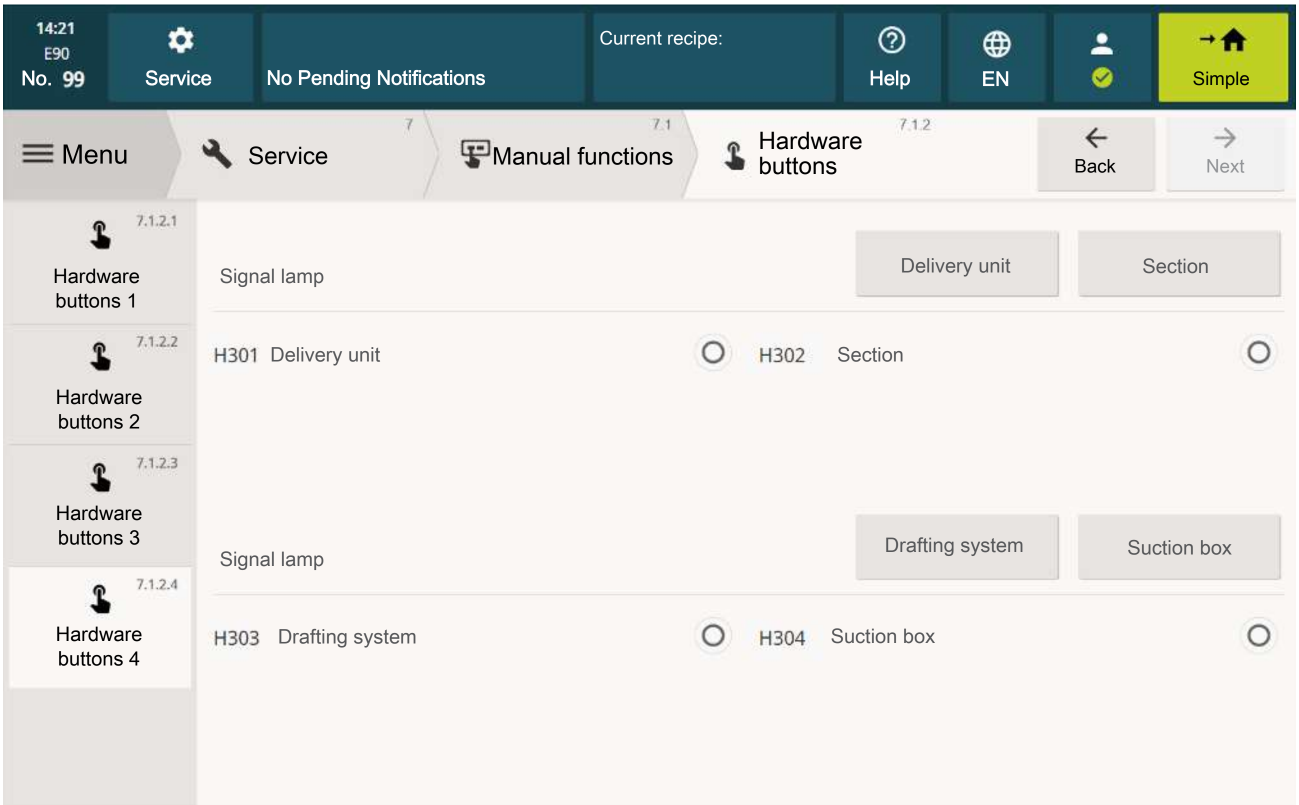

14:21
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
Manual functions
7.1
Hardware buttons
7.1.2
Back
Next
7.1.2.1
Hardware buttons 1
7.1.2.2
Hardware buttons 2
7.1.2.3
Hardware buttons 3
7.1.2.4
Hardware buttons 4
Signal lamp
Delivery unit
Section
H301 Delivery unit ○
H302 Section ○
Signal lamp
Drafting system
Suction box
H303 Drafting system ○
H304 Suction box ○

Figure 263: Data screen 7.1.2.4 Hardware buttons 4

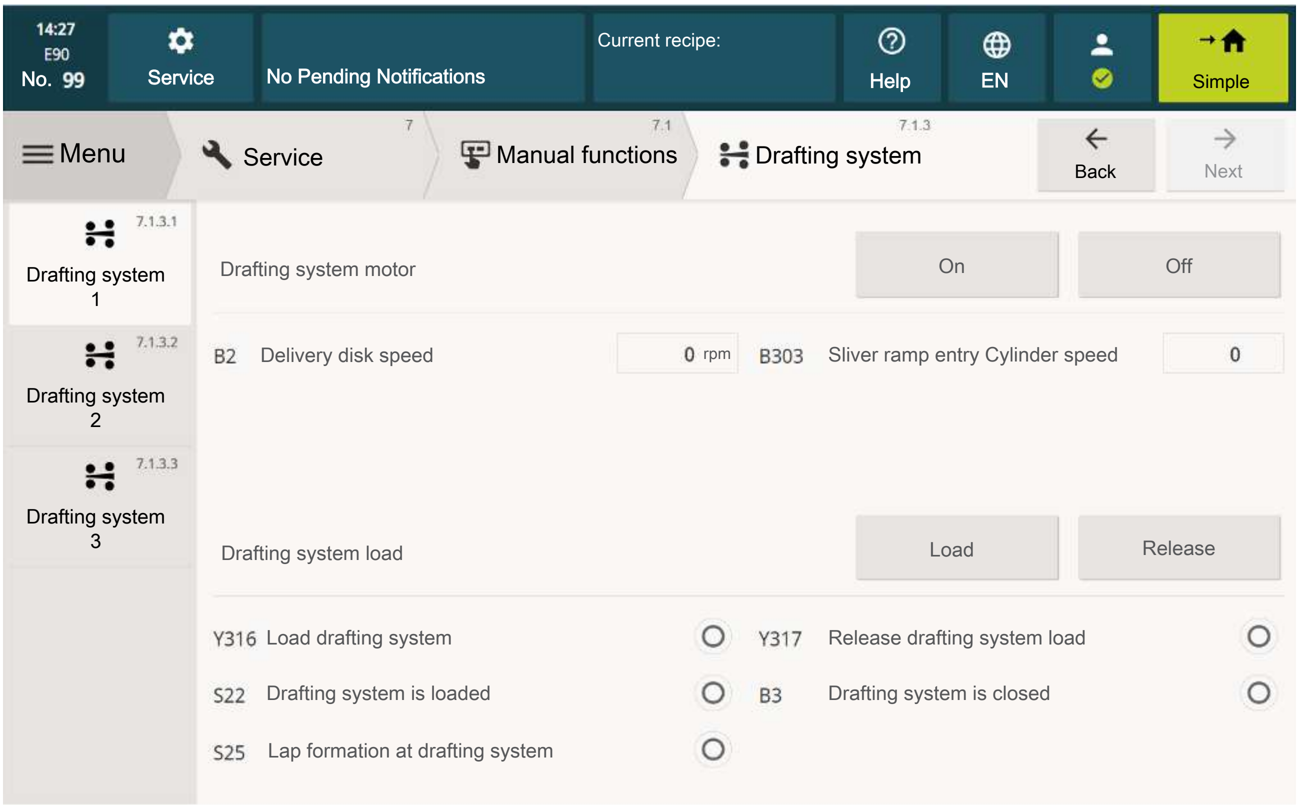
The machine has 4 signal lamps at the delivery unit (*refer to* ▸ *134*).

If the lamp is on or off, the lamp status indicators (*refer to* ▸ *222*) on the data screen change accordingly.

To turn on the lamp for the draw frame or the lamp for the combing unit, the key **Delivery unit** or **Section** is to be tapped.

To turn on the lamp for front side or rear side of the machine, the key **Drafting system** or **Suction box** is to be tapped.

7.3.9.8 Data Screen 7.1.3.1 Drafting System 1


14:27
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.3
Drafting system
Back
Next
7.1.3.1
Drafting system 1
7.1.3.2
Drafting system 2
7.1.3.3
Drafting system 3
On
Off
Load
Release

Drafting system motor

B2 Delivery disk speed 0 rpm

B303 Sliver ramp entry Cylinder speed 0

Drafting system load

Y316 Load drafting system ○

Y317 Release drafting system load ○

S22 Drafting system is loaded ○

B3 Drafting system is closed ○

S25 Lap formation at drafting system ○

Figure 264: Data screen 7.1.3.1 Drafting system 1

The machine has 4 top rollers and 3 bottom cylinders in the drafting system (*refer to* ▸ *65*). The bottom cylinders are operated by the motor, and the top rollers apply load to the bottom cylinders.

Drafting system motor

To start or stop the motor, the key **On** or **Off** is to be tapped.

If the drafting system motor works, the current speed of the calenders 1 is shown in the field.

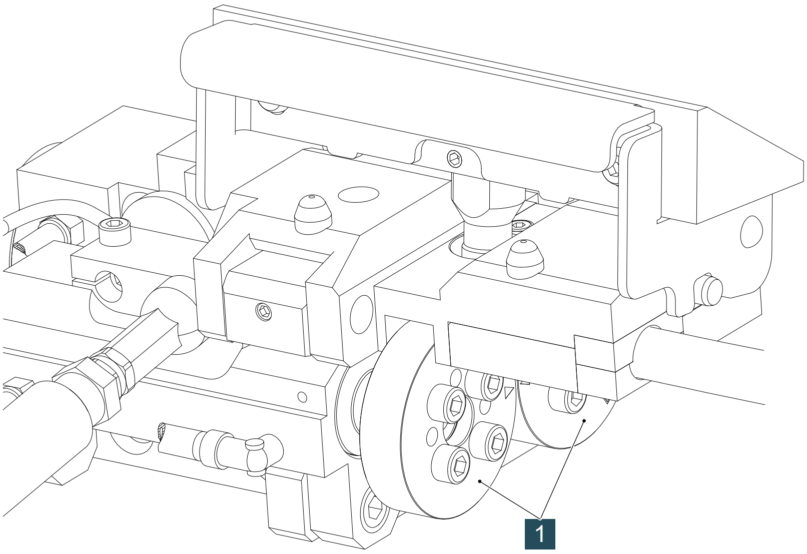
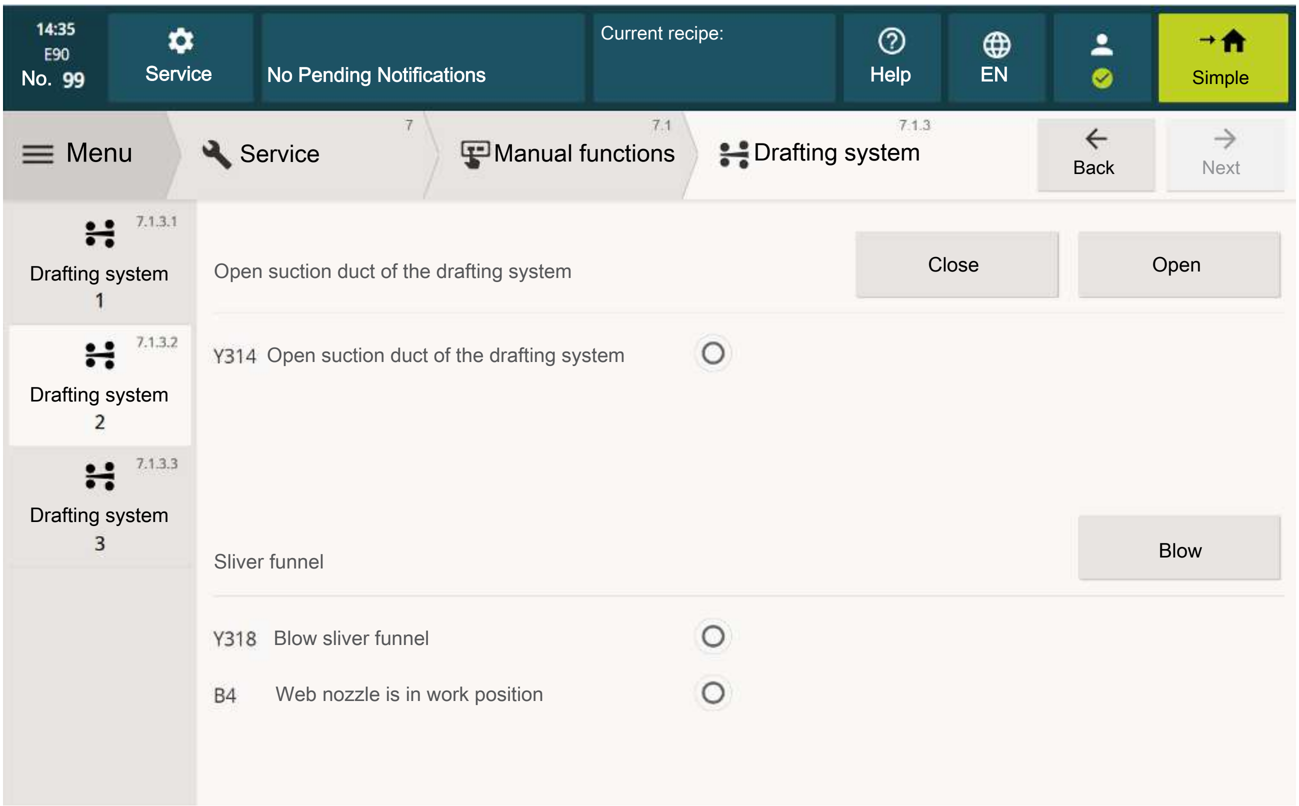


Figure 265: Calenders

Drafting system load

To control drafting system load, the key **Load** or **Release** is to be tapped. Then the status indicator (*refer to* ▸ *222*) changes accordingly.

7.3.9.9 Data Screen 7.1.3.2 Drafting System 2


14:35
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.3
Drafting system
Back
Next
7.1.3.1
Drafting system 1
7.1.3.2
Drafting system 2
7.1.3.3
Drafting system 3
Close
Open
Blow

Open suction duct of the drafting system

Y314 Open suction duct of the drafting system ○

Sliver funnel

Y318 Blow sliver funnel ○

B4 Web nozzle is in work position ○

Figure 266: Data screen 7.1.3.2 Drafting system 2

Open suction duct of the drafting system

The suction duct of the drafting system is controlled by the cylinder (*refer to* ▸ *45*).

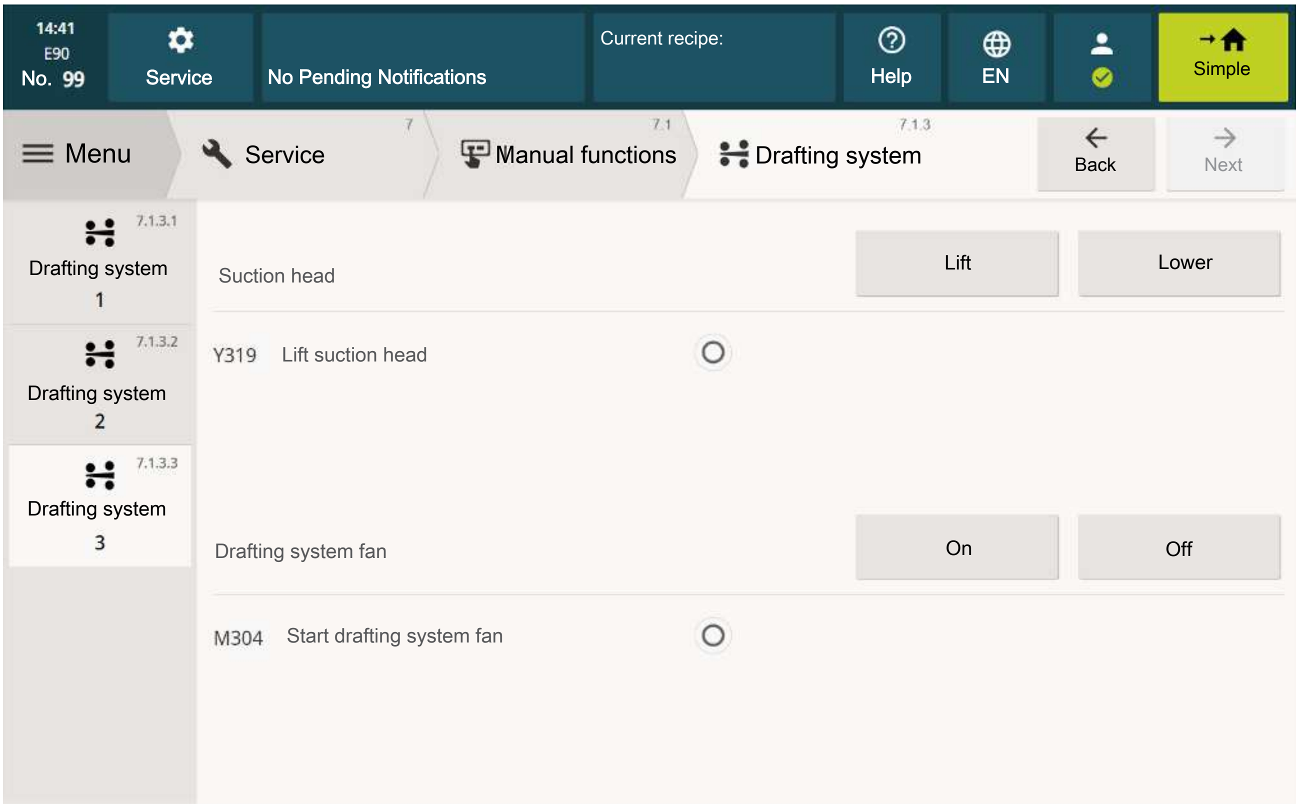
To control the cylinder, the key **Close** or **Open** is to be tapped. The status indicator (*refer to* ▸ *222*) of the parameter changes accordingly.

Sliver funnel

To make the air continue to blow into the sliver funnel, the key **Blow** is to be tapped and held. Then the status of **Y318 Blow sliver funnel** changes accordingly.

When the web nozzle has a sliver jam, a fault message is shown on the data screen. The status of the parameter **B4 Web nozzle is in work position** changes accordingly.

7.3.9.10 Data Screen 7.1.3.3 Drafting System 3



14:41
E90
No. 99

Service

No Pending Notifications

Current recipe:

Help

EN

Simple

Menu

7 Service

7.1 Manual functions

7.1.3 Drafting system

Back

Next

7.1.3.1 Drafting system 1

7.1.3.2 Drafting system 2

7.1.3.3 Drafting system 3

Suction head — Lift — Lower

Y319 Lift suction head ○

Drafting system fan — On — Off

M304 Start drafting system fan ○

Figure 267: Data screen 7.1.3.3 Drafting system 3

Suction head

The suction head 1 lifts 10 mm in each 1 minute. Then the dust and dirt can be removed through the suction head 1.

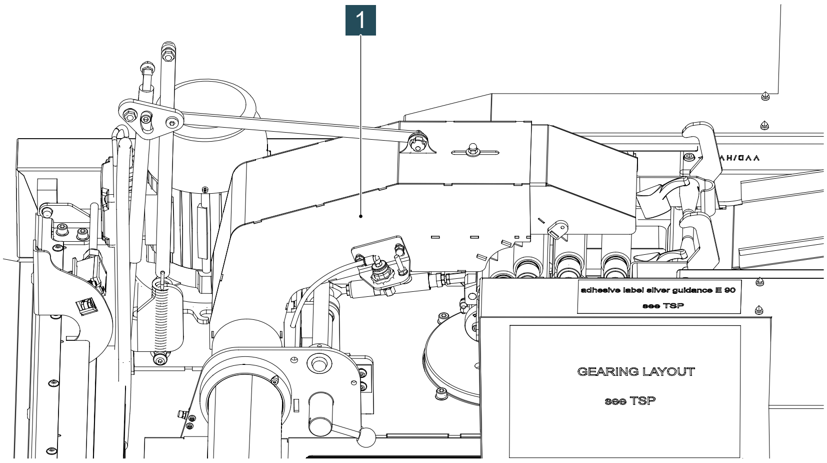


Figure 268: Suction head

To lift and lower the suction head manually, the keys **Lift** and **Lower** are to be tapped. Then the related status indicators (*refer to ▸ 222*) change accordingly.

Drafting system fan

The machine has 2 fans 2 at the drafting system. The fans prevent that the dust and dirt in the air from coming into the suction system.

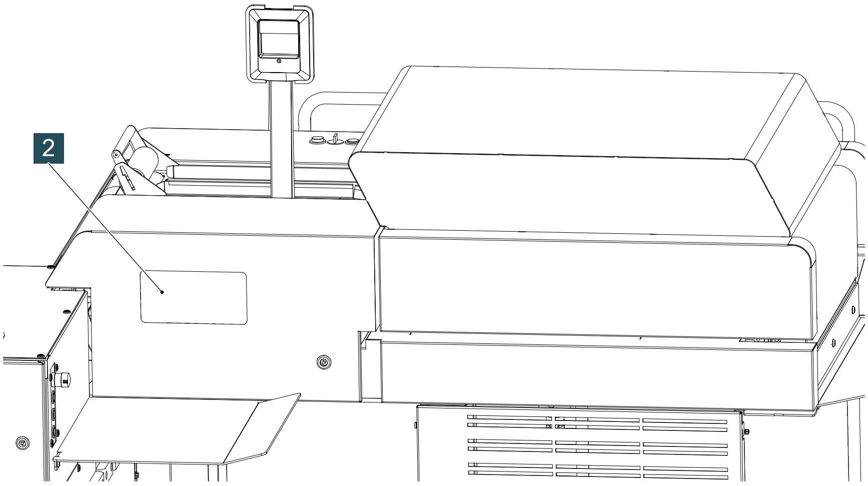
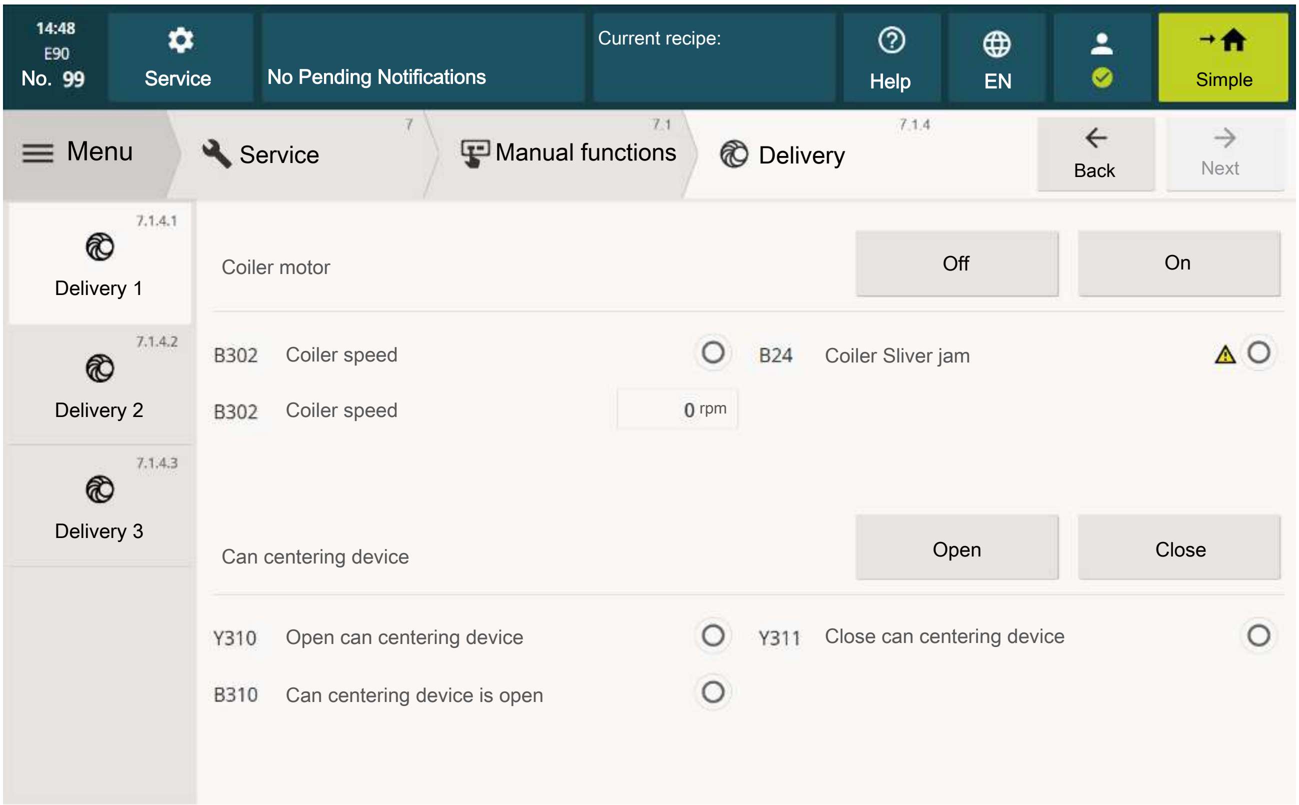


Figure 269: Fans

The fans can be turned on or turned off with the key **On** or **Off**. Then the related status indicators change accordingly.

7.3.9.11 Data Screen 7.1.4.1 Delivery 1


14:48
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
Manual functions
7.1
Delivery
7.1.4
Back
Next
7.1.4.1
Delivery 1
7.1.4.2
Delivery 2
7.1.4.3
Delivery 3
Off
On
Open
Close

Coiler motor

B302 Coiler speed ○

B24 Coiler Sliver jam ⚠ ○

B302 Coiler speed 0 rpm

Can centering device

Y310 Open can centering device ○

Y311 Close can centering device ○

B310 Can centering device is open ○

Figure 270: Data screen 7.1.4.1 Delivery 1

Coiler motor

The coiler motor can be stopped and started with the key **Off** or **On**

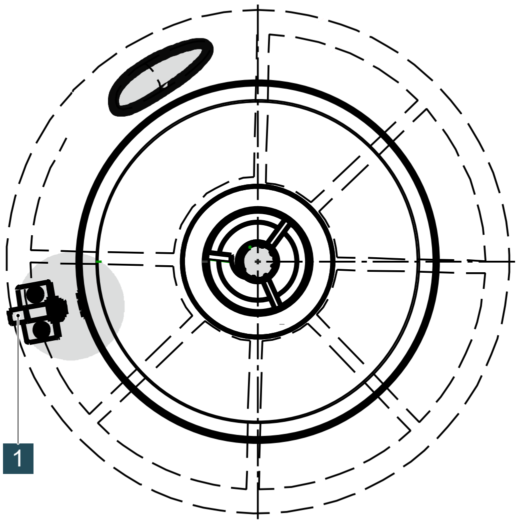


Figure 271: Proximity switch (CD 600 mm)

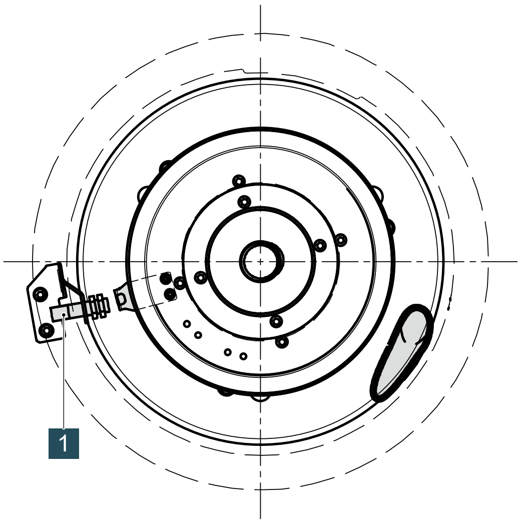


Figure 272: Proximity switch (CD 1000 / 1200 mm)

The machine has the sensor 1 to monitor the coiler speed.

Can centering device

The can centering device 2 can be controlled with the keys **Close** or **Open**. If one of the keys is tapped, then the related status indicators (*refer to ▸ 222*) change accordingly.

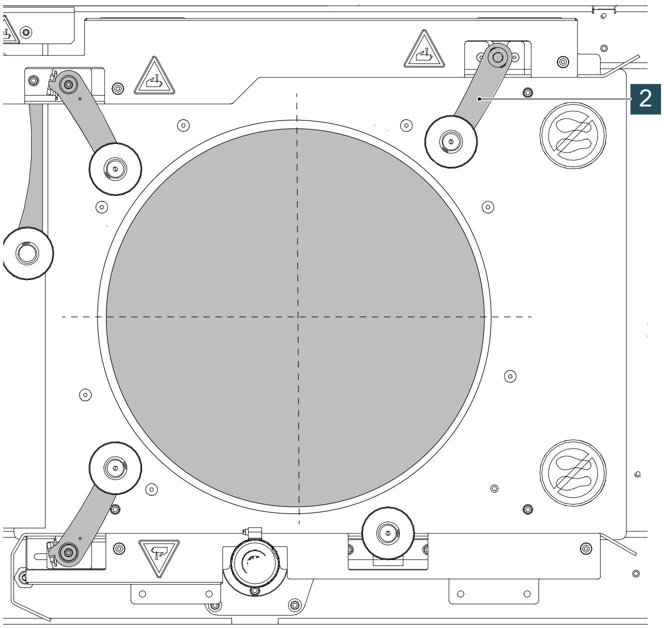


Figure 273: Can centering device (CD 600 mm)

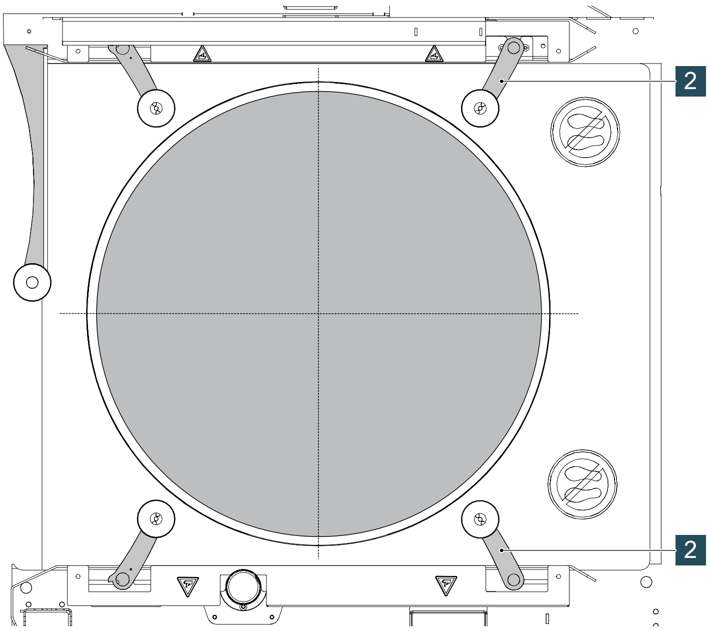
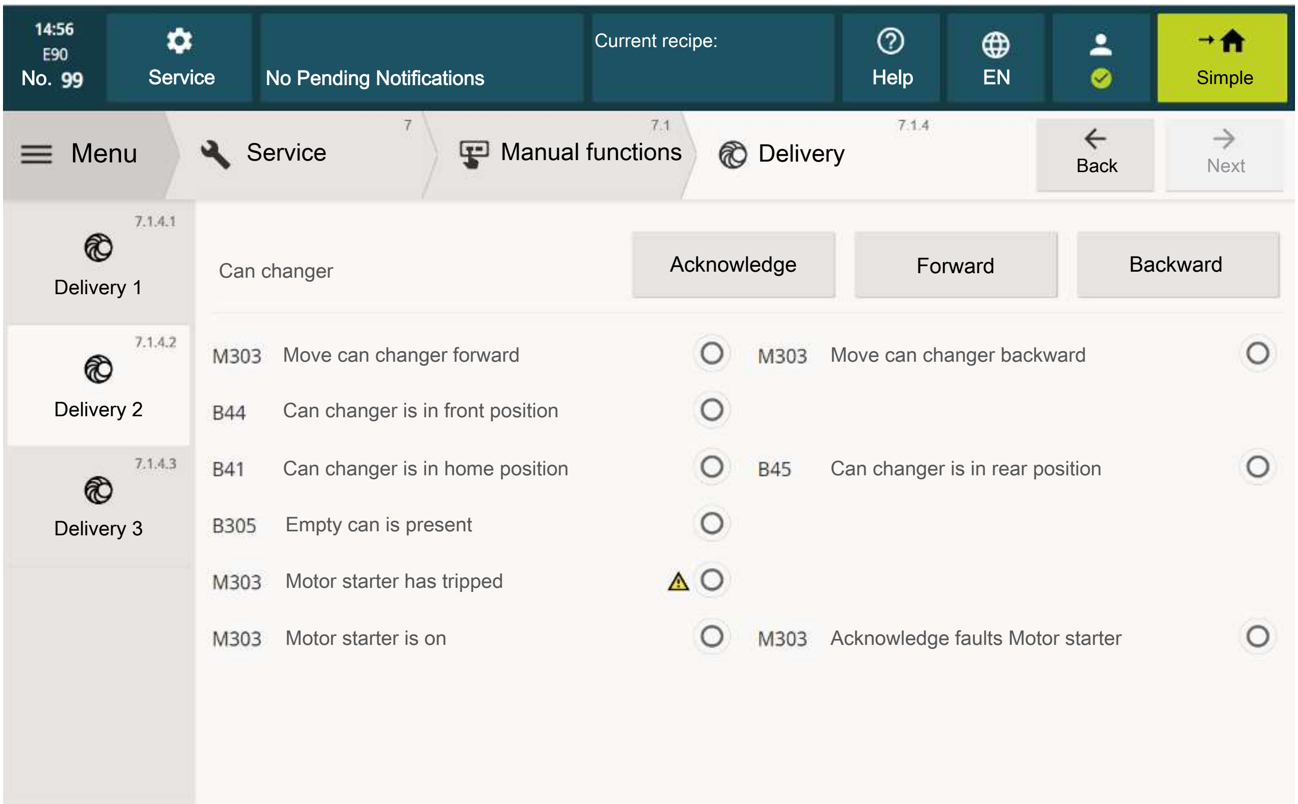


Figure 274: Can centering device (CD 1000 / 1200 mm)

7.3.9.12 Data Screen 7.1.4.2 Delivery 2


14:56
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.4
Delivery
Back
Next
7.1.4.1
Delivery 1
7.1.4.2
Delivery 2
7.1.4.3
Delivery 3
Can changer
Acknowledge
Forward
Backward

M303	Move can changer forward	○	M303	Move can changer backward	○
B44	Can changer is in front position	○			
B41	Can changer is in home position	○	B45	Can changer is in rear position	○
B305	Empty can is present	○			
M303	Motor starter has tripped	⚠ ○			
M303	Motor starter is on	○	M303	Acknowledge faults Motor starter	○

Figure 275: Data screen 7.1.4.2 Delivery 2

Can changer

To make the can changer 1 go forward and backward, the key **Forward** or **Backward** are to be tapped. The related status indicators (*refer to* ▸ *222*) change accordingly.

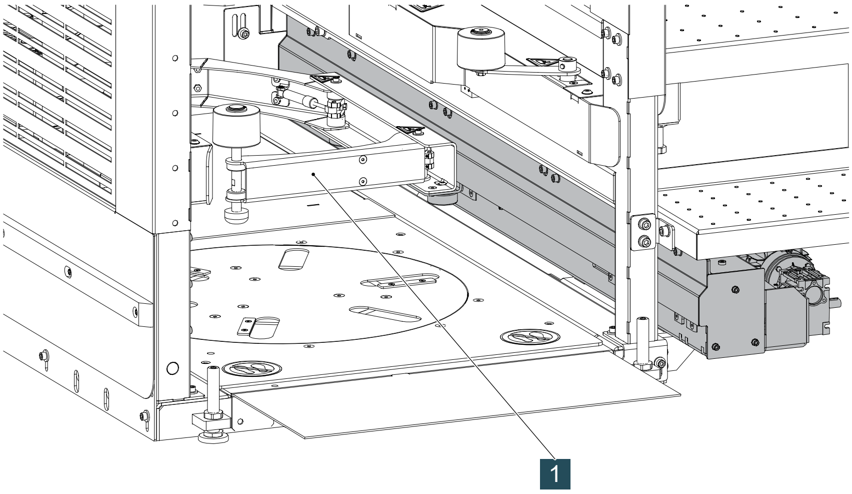
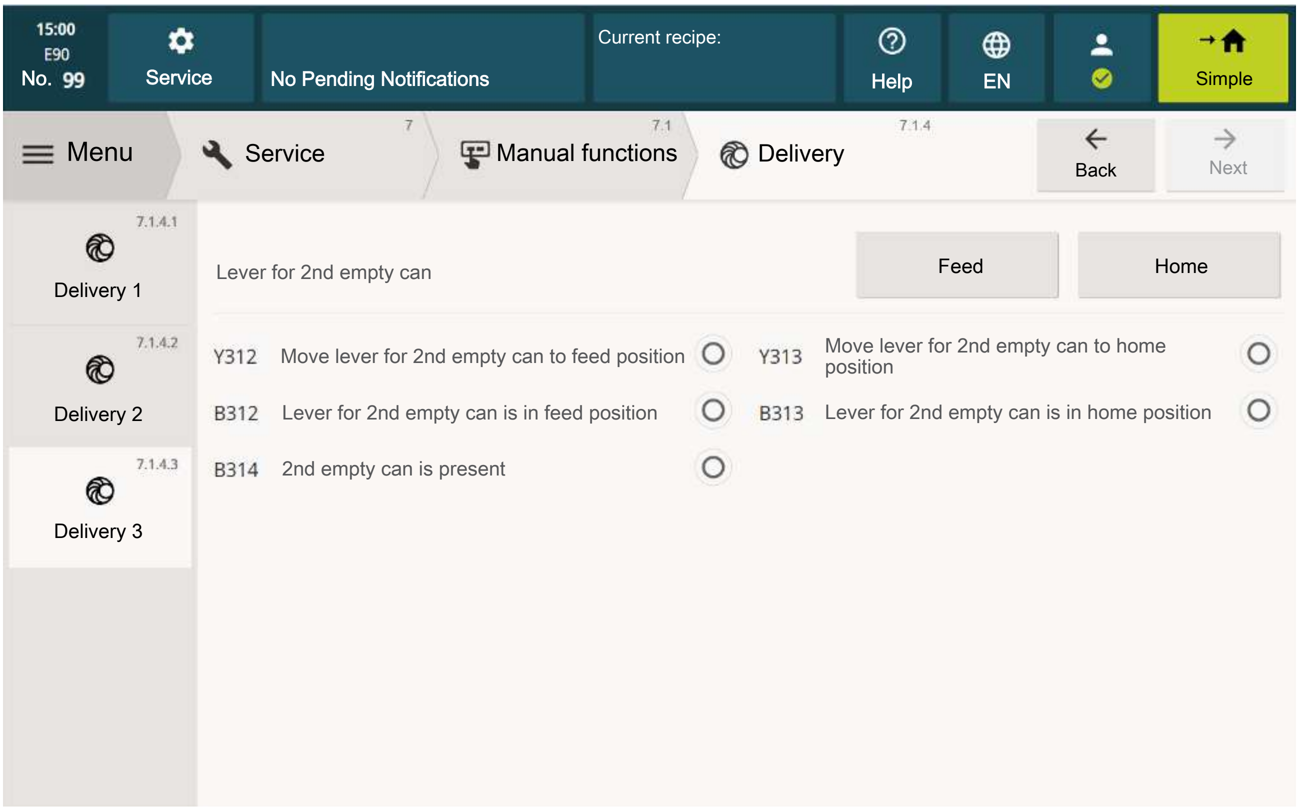


Figure 276: Can changer

M303 Motor starter has tripped

If the motor is overload or overcurrent, the motor started trips. Then the status indicator changes to green. The motor starter can be closed with the key **Acknowledge**. Then the motor can work again.

7.3.9.13 Data Screen 7.1.4.3 Delivery 3


15:00
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
Manual functions
7.1
Delivery
7.1.4
Back
Next
7.1.4.1
Delivery 1
7.1.4.2
Delivery 2
7.1.4.3
Delivery 3
Feed
Home

Lever for 2nd empty can

Y312 Move lever for 2nd empty can to feed position ○

Y313 Move lever for 2nd empty can to home position ○

B312 Lever for 2nd empty can is in feed position ○

B313 Lever for 2nd empty can is in home position ○

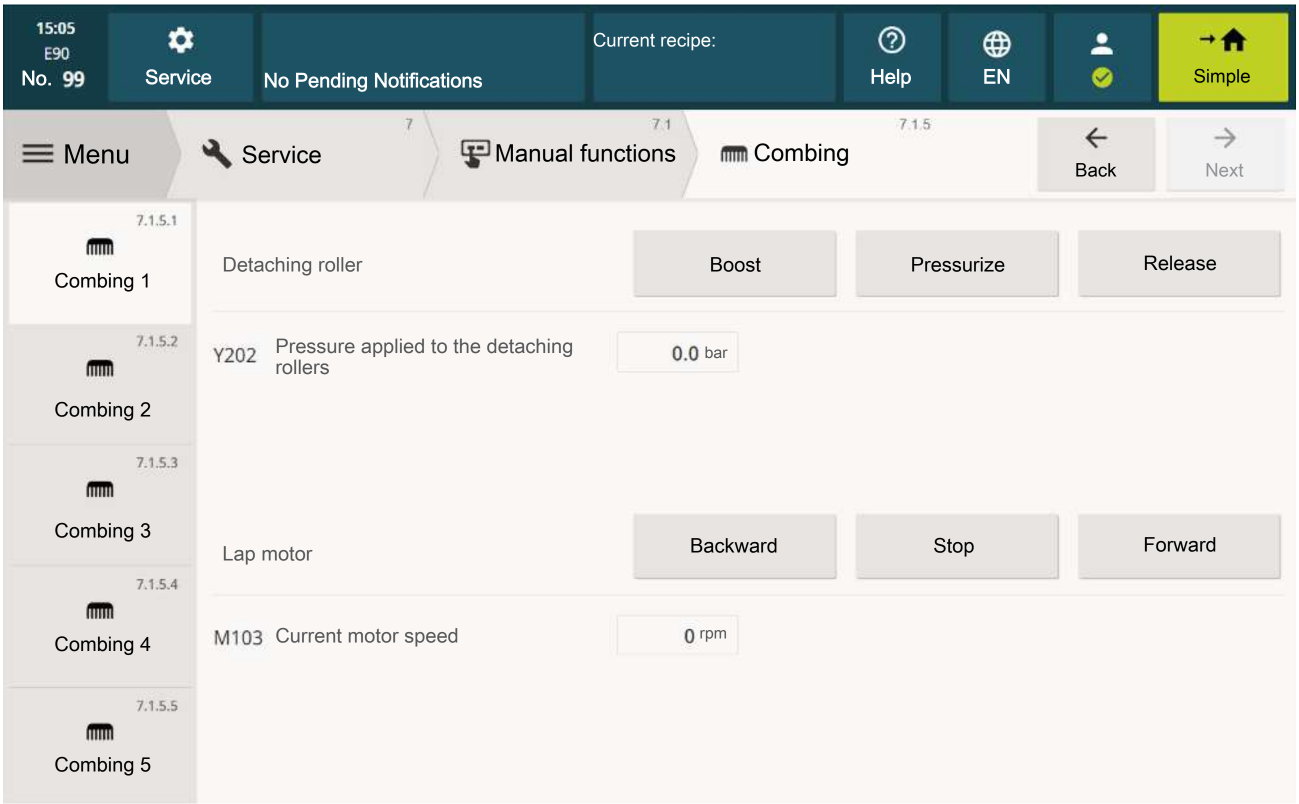
B314 2nd empty can is present ○

Figure 277: Data screen 7.1.4.3 Delivery 3

Only the delivery unit with can diameter 600 mm has the lever for second empty can.

By tapping the key **Feed** or **Home**, the lever for second empty can changes to different positioins. The related status indicators (*refer to ▸ 222*) change accordingly.

7.3.9.14 Data Screen 7.1.5.1 Combing 1


15:05
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
Manual functions
7.1
Combing
7.1.5
Back
Next
7.1.5.1
Combing 1
7.1.5.2
Combing 2
7.1.5.3
Combing 3
7.1.5.4
Combing 4
7.1.5.5
Combing 5
Detaching roller
Boost
Pressurize
Release
Lap motor
Backward
Stop
Forward

Y202 Pressure applied to the detaching rollers 0.0 bar

M103 Current motor speed 0 rpm

Figure 278: Data screen 7.1.5.1 Combing 1

Detaching roller

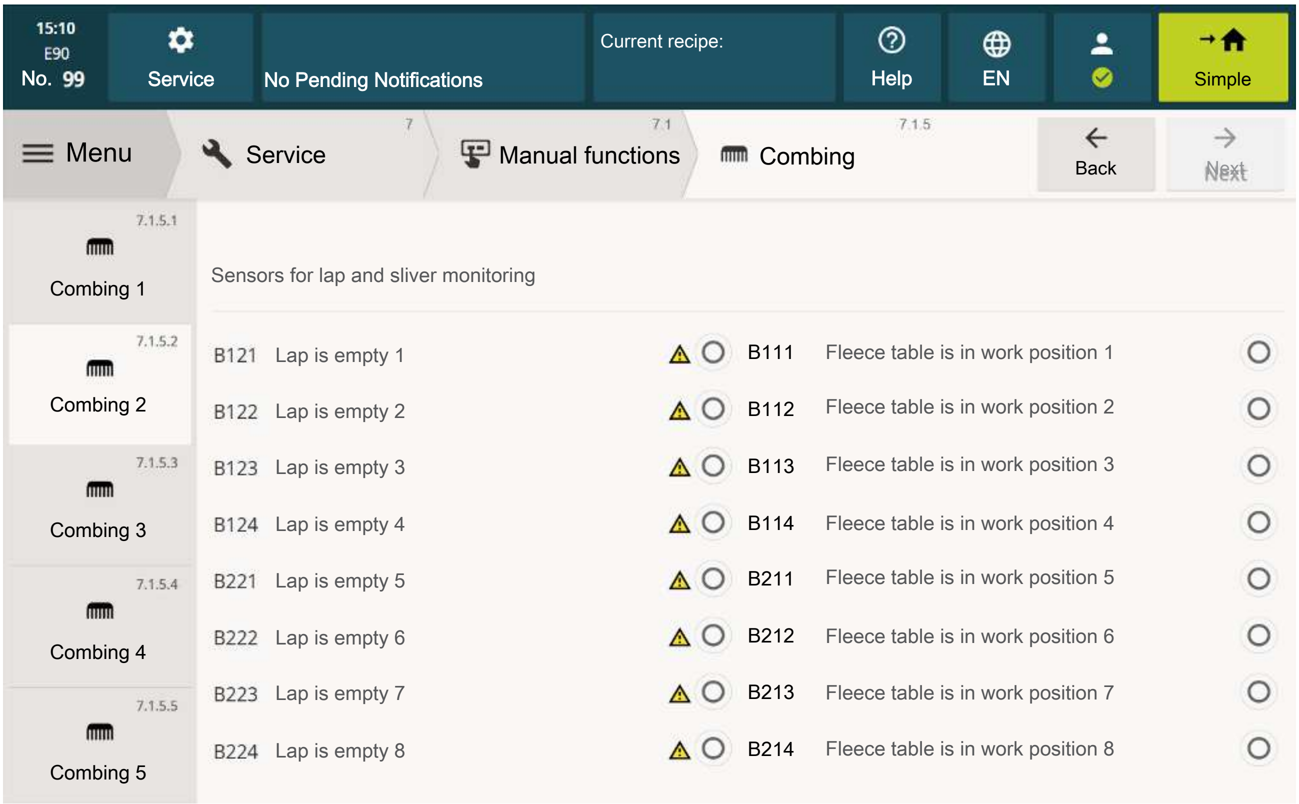
These keys are to be tapped to apply the pressure to, release the pressure from, or increase the pressure of the detaching rollers. Then value in **Y202 Pressure applied to the detaching rollers** changes accordingly.

The applied and boosted pressures can be set at the data screen 1.5.2 (*refer to* ▸ *177*).

Lap motor

These keys can be tapped to let the lap rollers move backward, stop, or move forward. Then the value of the parameter **M103 Current motor speed** changes accordingly.

7.3.9.15 Data Screen 7.1.5.2 Combing 2


15:10
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.5
Combing
Back
Next
7.1.5.1
Combing 1
7.1.5.2
Combing 2
7.1.5.3
Combing 3
7.1.5.4
Combing 4
7.1.5.5
Combing 5

Sensors for lap and sliver monitoring

B121	Lap is empty 1	⚠ ○	B111	Fleece table is in work position 1	○
B122	Lap is empty 2	⚠ ○	B112	Fleece table is in work position 2	○
B123	Lap is empty 3	⚠ ○	B113	Fleece table is in work position 3	○
B124	Lap is empty 4	⚠ ○	B114	Fleece table is in work position 4	○
B221	Lap is empty 5	⚠ ○	B211	Fleece table is in work position 5	○
B222	Lap is empty 6	⚠ ○	B212	Fleece table is in work position 6	○
B223	Lap is empty 7	⚠ ○	B213	Fleece table is in work position 7	○
B224	Lap is empty 8	⚠ ○	B214	Fleece table is in work position 8	○

Figure 279: Data screen 7.1.5.2 Combing 2

Combing positions 1 - 8 are counted from the head stock to the delivery unit.

The parameters on this data screen show the lap status and the fleece table status.

If a sliver jam is in 1 of the table funnels 1, the related status indicator is grey. If the fleece table is in work position, the status indicator changes to green (*refer to ▸ 222*).

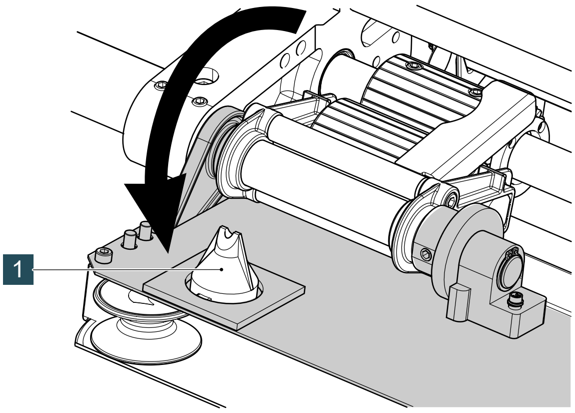
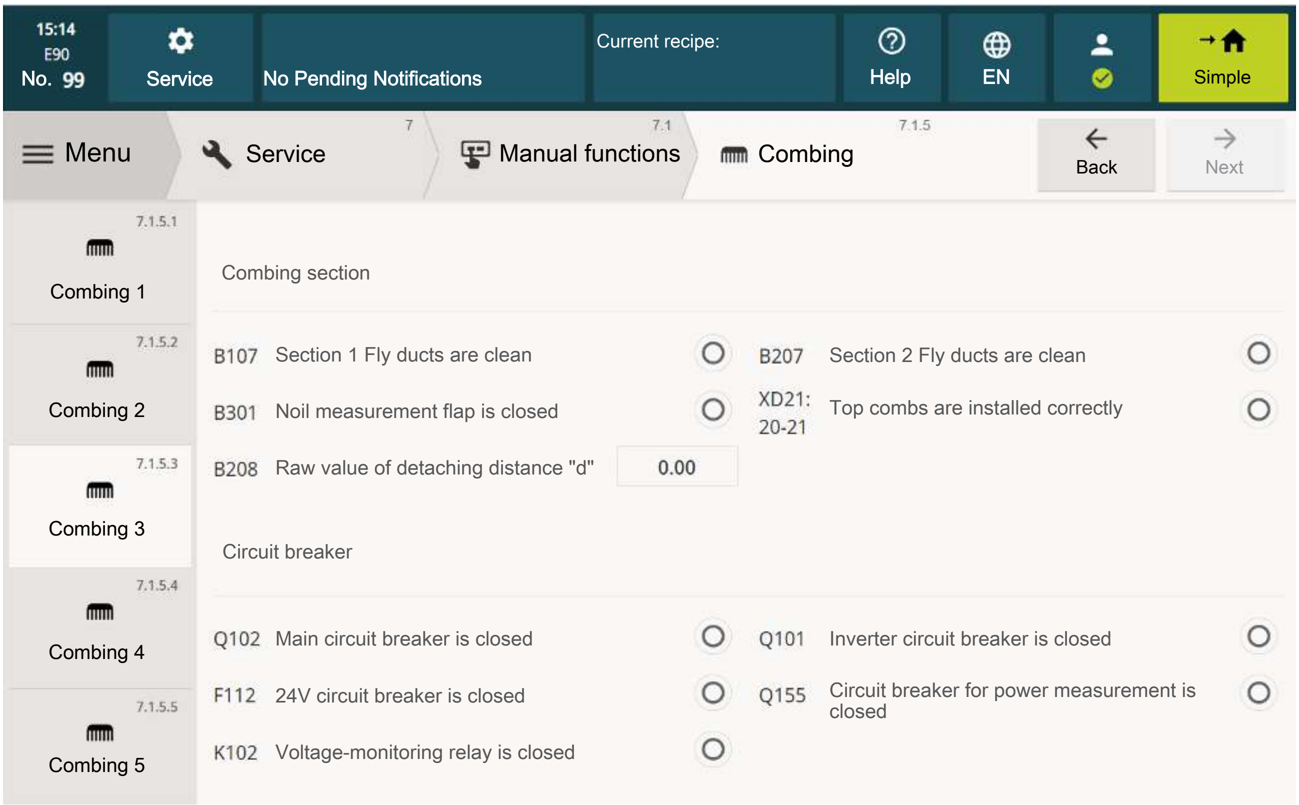


Figure 280: Table funnel on the fleece table

If a monitor finds the black tube of a lap is shown, the related lap status indicators change to green (*refer to* ▸ *58*).

7.3.9.16 Data Screen 7.1.5.3 Combing 3


15:14
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.5
Combing
Back
Next
7.1.5.1
Combing 1
7.1.5.2
Combing 2
7.1.5.3
Combing 3
7.1.5.4
Combing 4
7.1.5.5
Combing 5

Combing section

B107	Section 1 Fly ducts are clean	○	B207	Section 2 Fly ducts are clean	○
B301	Noil measurement flap is closed	○	XD21: 20-21	Top combs are installed correctly	○
B208	Raw value of detaching distance "d"	0.00			

Circuit breaker

Q102	Main circuit breaker is closed	○	Q101	Inverter circuit breaker is closed	○
F112	24V circuit breaker is closed	○	Q155	Circuit breaker for power measurement is closed	○
K102	Voltage-monitoring relay is closed	○			

Figure 281: Data screen 7.1.5.3 Combing 3

The combing positions 1 - 8 are counted from the head stock to the delivery unit.

Combing section

If 1 of the fly ducts are clean, the related status indicators change to green.

B301 Noil measurement flap is closed:

If the cover 1 of the noil collector is closed, the status indicators of this parameter change to green.

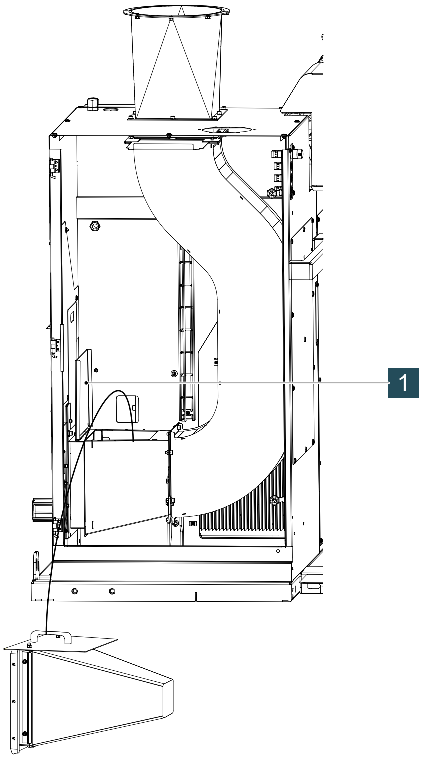


Figure 282: Noil collector

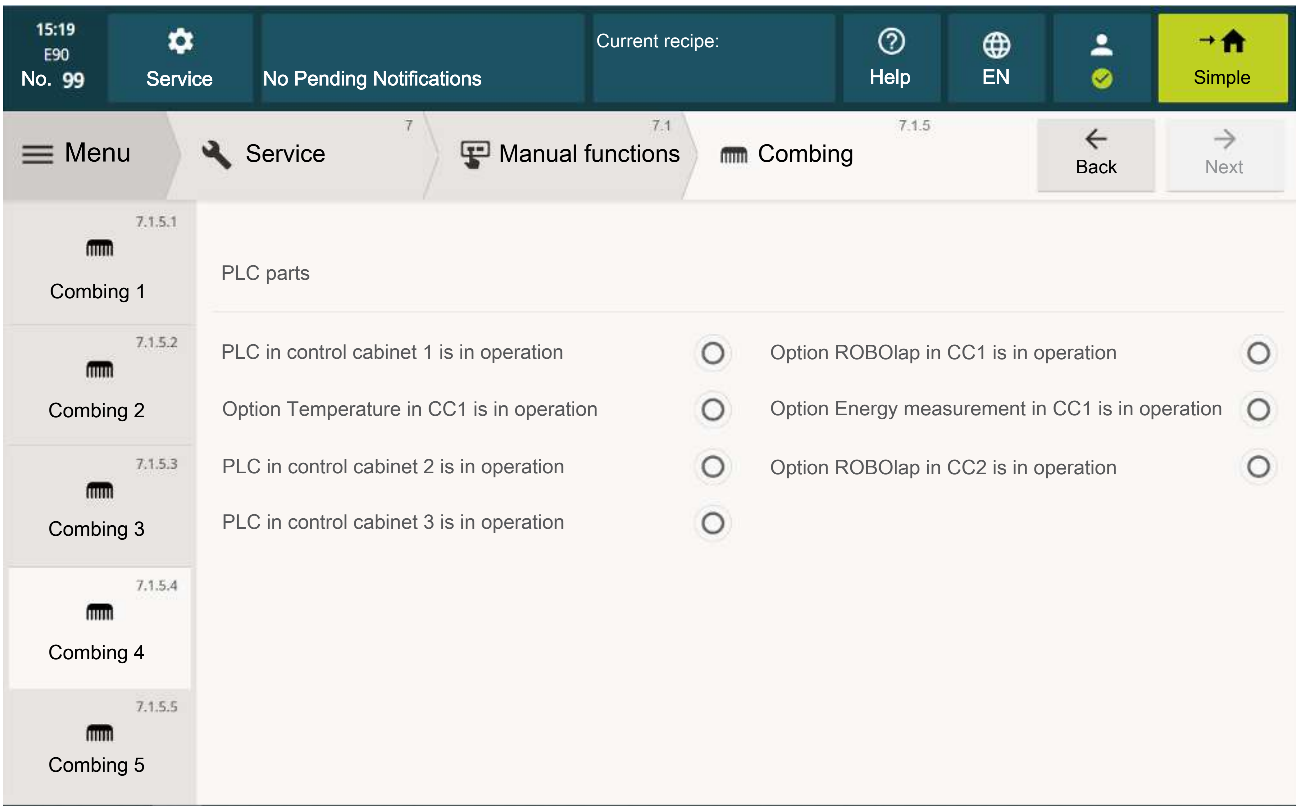
Circuit breaker

These parameters show the circuit breaker status of the machine.

Q155 Circuit breaker for power measurement is closed:

If the circuit breaker has not tripped on the machine, the status indicators are green.

7.3.9.17 Data Screen 7.1.5.4 Combing 4


15:19
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
Manual functions
7.1
Combing
7.1.5
Back
Next
7.1.5.1
Combing 1
7.1.5.2
Combing 2
7.1.5.3
Combing 3
7.1.5.4
Combing 4
7.1.5.5
Combing 5

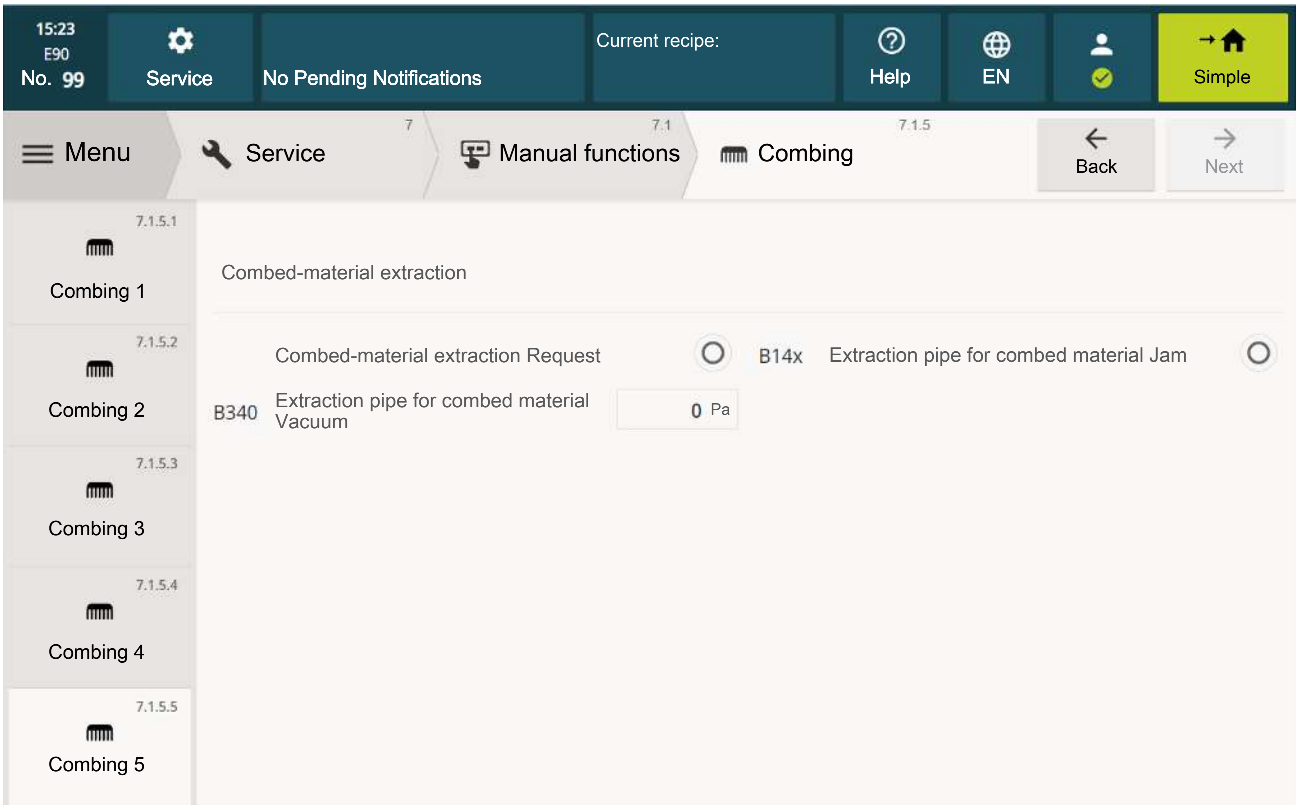
PLC parts

PLC in control cabinet 1 is in operation ○
Option Temperature in CC1 is in operation ○
PLC in control cabinet 2 is in operation ○
PLC in control cabinet 3 is in operation ○
Option ROBOlap in CC1 is in operation ○
Option Energy measurement in CC1 is in operation ○
Option ROBOlap in CC2 is in operation ○

Figure 283: Data screen 7.1.5.4 Combing 4

The status indicator (*refer to ▸ 222*) of the PLC parts in control cabinets 1, 2, and 3 is shown.

7.3.9.18 Data Screen 7.1.5.5 Combing 5


15:23
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.5
Combing
Back
Next
7.1.5.1
Combing 1
7.1.5.2
Combing 2
7.1.5.3
Combing 3
7.1.5.4
Combing 4
7.1.5.5
Combing 5

Combed-material extraction

Combed-material extraction Request ○

B14x Extraction pipe for combed material Jam ○

B340 Extraction pipe for combed material Vacuum 0 Pa

Figure 284: Data screen 7.1.5.5 Combing 5

Combed-material extraction Request

If the Blowroom sends a request to the comber that material is necessary, this status indicator changes to green. The comber will start with this request automatically.

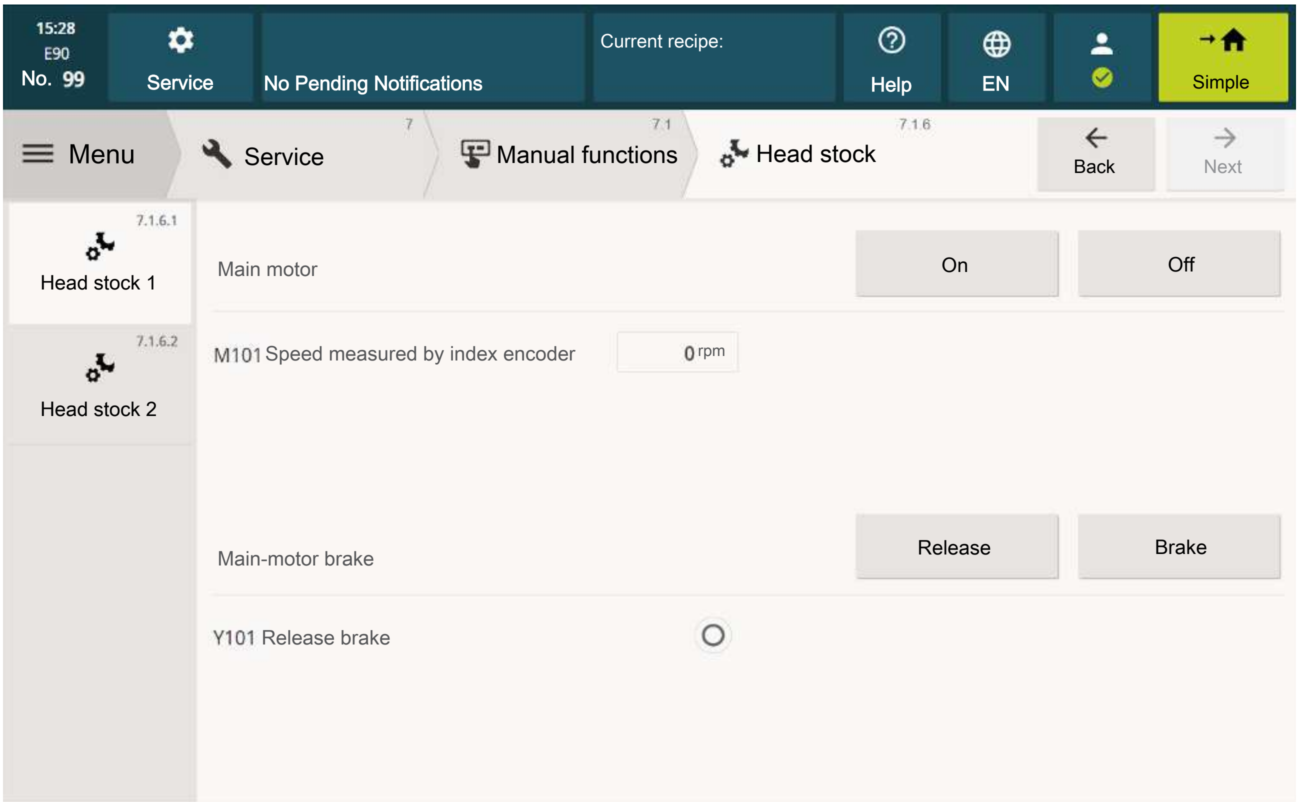
Extraction pipe for combed material Jam

If there is a problem at 1 of the 8 combing sections, this status indicator changes to green. Sensor B141 – B144 and B245 – B248 monitors a problem with the sliver. The possible problems are: No material going into the suction (for example, the sliver goes incorrect way into the machine) or the material is laying on the table (for example, because the suction nozzle is blocked).

Extraction pipe for combed material Vacuum

The under pressure for the combed-material extraction is measured. If the value is smaller than 300 Pa, the machine stops.

7.3.9.19 Data Screen 7.1.6.1 Head Stock 1


15:28
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.6
Head stock
Back
Next
7.1.6.1
Head stock 1
7.1.6.2
Head stock 2
Main motor
On
Off
Main-motor brake
Release
Brake

M101 Speed measured by index encoder 0 rpm

Y101 Release brake ○

Figure 285: Data screen 7.1.6.1 Head stock 1

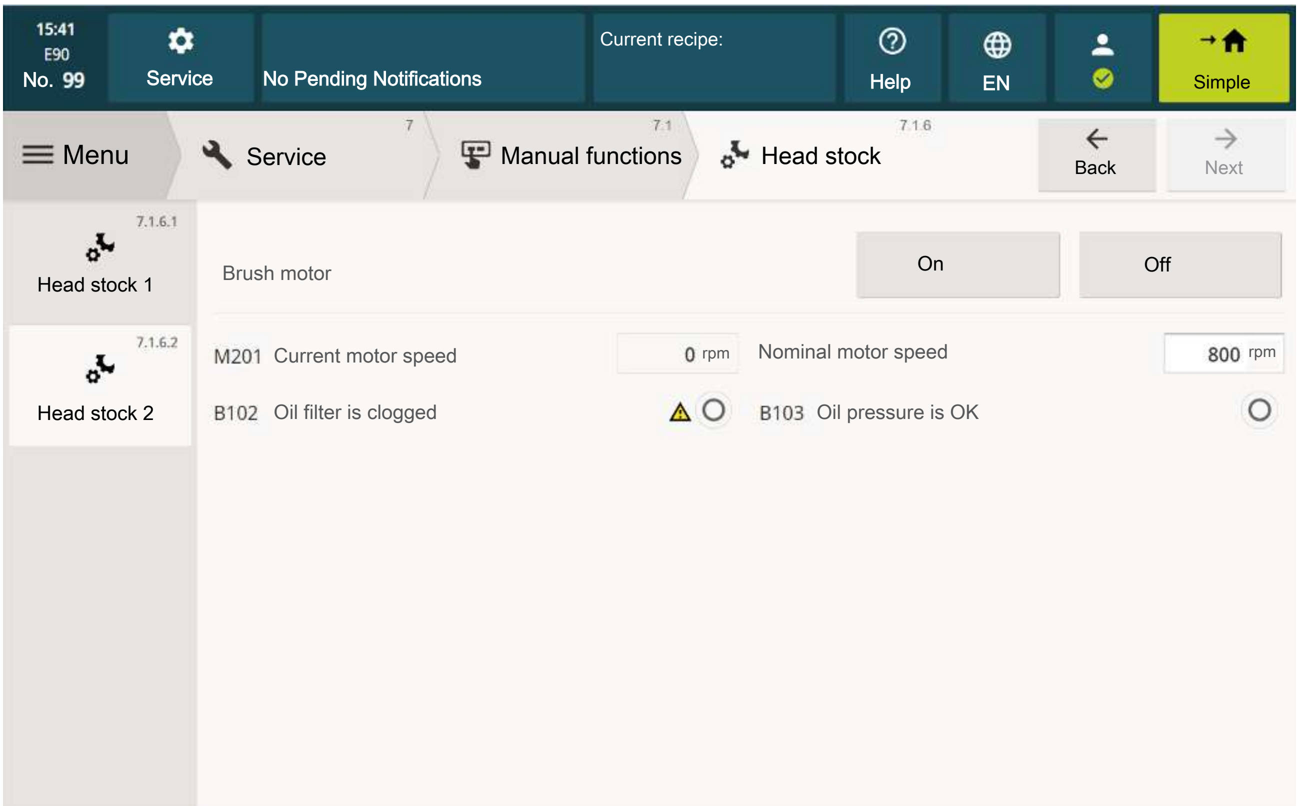
Main motor

To control the main motor of the head stock, the key **On** or **Off** is to be tapped. Then the current motor speed is shown in the field **Speed measured by index encoder**.

Main-motor brake

To release or brake the main-motor brake, the key **Release** or **Brake** is to be tapped. Then the status indicators (*refer to* ▸ *222*) change accordingly.

7.3.9.20 Data Screen 7.1.6.2 Head Stock 2


15:41
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.6
Head stock
Back
Next
7.1.6.1
Head stock 1
7.1.6.2
Head stock 2
Brush motor
On
Off

M201 Current motor speed 0 rpm

Nominal motor speed 800 rpm

B102 Oil filter is clogged ⚠ ○

B103 Oil pressure is OK ○

Figure 286: Data screen 7.1.6.2 Head stock 2

Brush motor

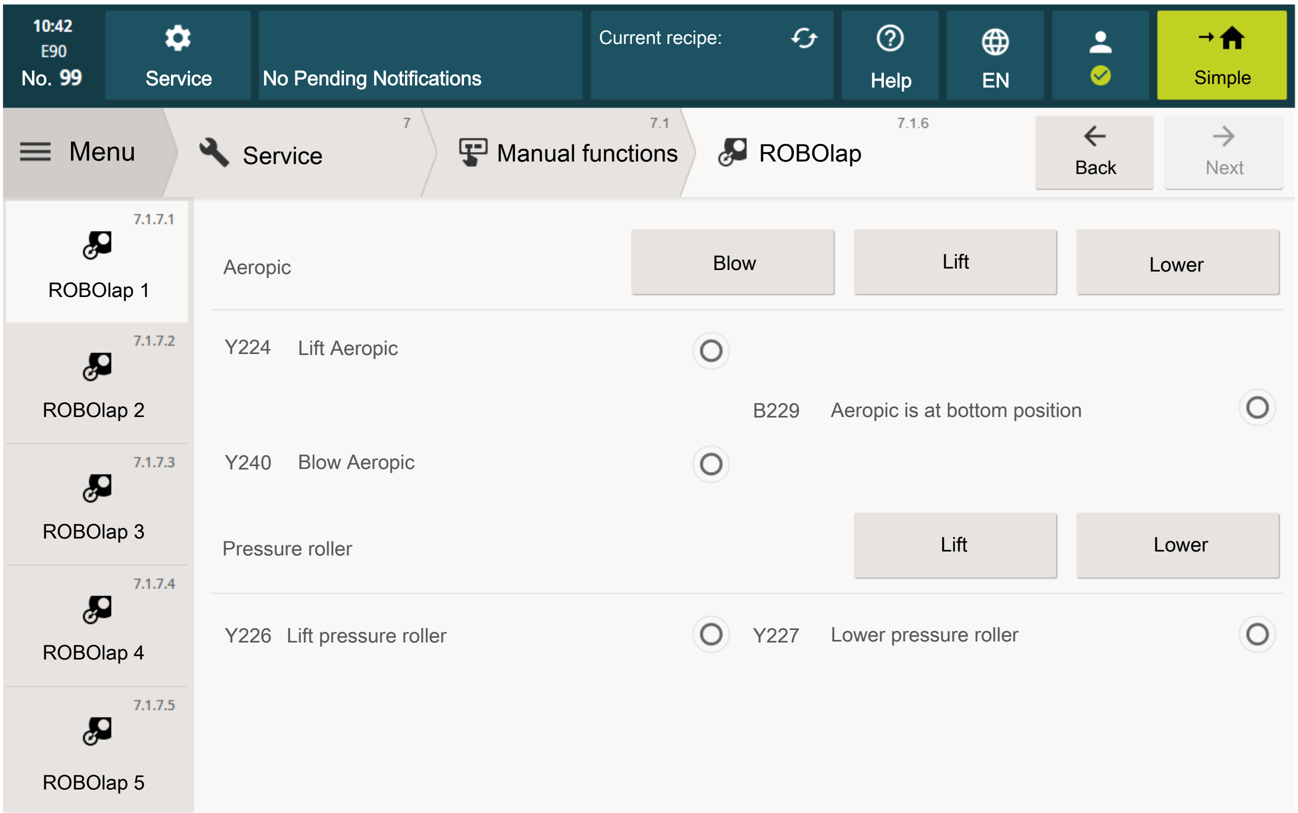
The brush motor can be controlled with the key **On** or **Off**. The motor speed can be set in the parameter **Nominal motor speed** for testing. If the motor is in operation, the current speed of the motor is shown in the field.

The oil status of the head stock is shown with the 2 oil-related sensors.

If the 2 oil-related sensor values change, the corresponding machine status can be found in the table that follows:

B 102	B 103	Status
○	○	Machine is at a standstill. / The oil pump has a defect.
○	●	The machine runs correctly.
●	○	The filter is clogged.
●	●	The lubrication nozzles or the tube after P2 is clogged.

7.3.9.21 Data Screen 7.1.7.1 ROBOlap 1


10:42
E90
No. 99
Service
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.6
ROBOlap
Back
Next
7.1.7.1
ROBOlap 1
7.1.7.2
ROBOlap 2
7.1.7.3
ROBOlap 3
7.1.7.4
ROBOlap 4
7.1.7.5
ROBOlap 5
Blow
Lift
Lower
Lift
Lower

No Pending Notifications

Aeropic

Y224 Lift Aeropic ○

B229 Aeropic is at bottom position ○

Y240 Blow Aeropic ○

Pressure roller

Y226 Lift pressure roller ○

Y227 Lower pressure roller ○

Figure 287: Data screen 7.1.7.1 ROBOlap 1

The machine has Aeropic to do the batt piecing automatically (*refer to* ▸ *63*).

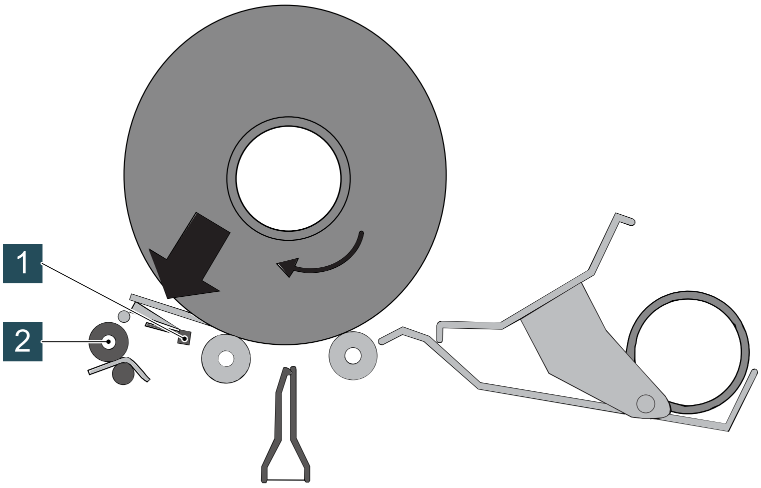


Figure 288: Aeropic

Aeropic

To control the action of the Aeropic 1, the key **Blow**, **Lift**, or **Lower** is to be tapped. Then the related status indicators (*refer to ▸ 222*) change accordingly.

Pressure roller

To control the action of the pressure roller 2, the key **Lift** or **Lower** is to be tapped. Then the related status indicators (*refer to ▸ 222*) change accordingly.

7.3.9.22 Data Screen 7.1.7.2 ROBOlap 2

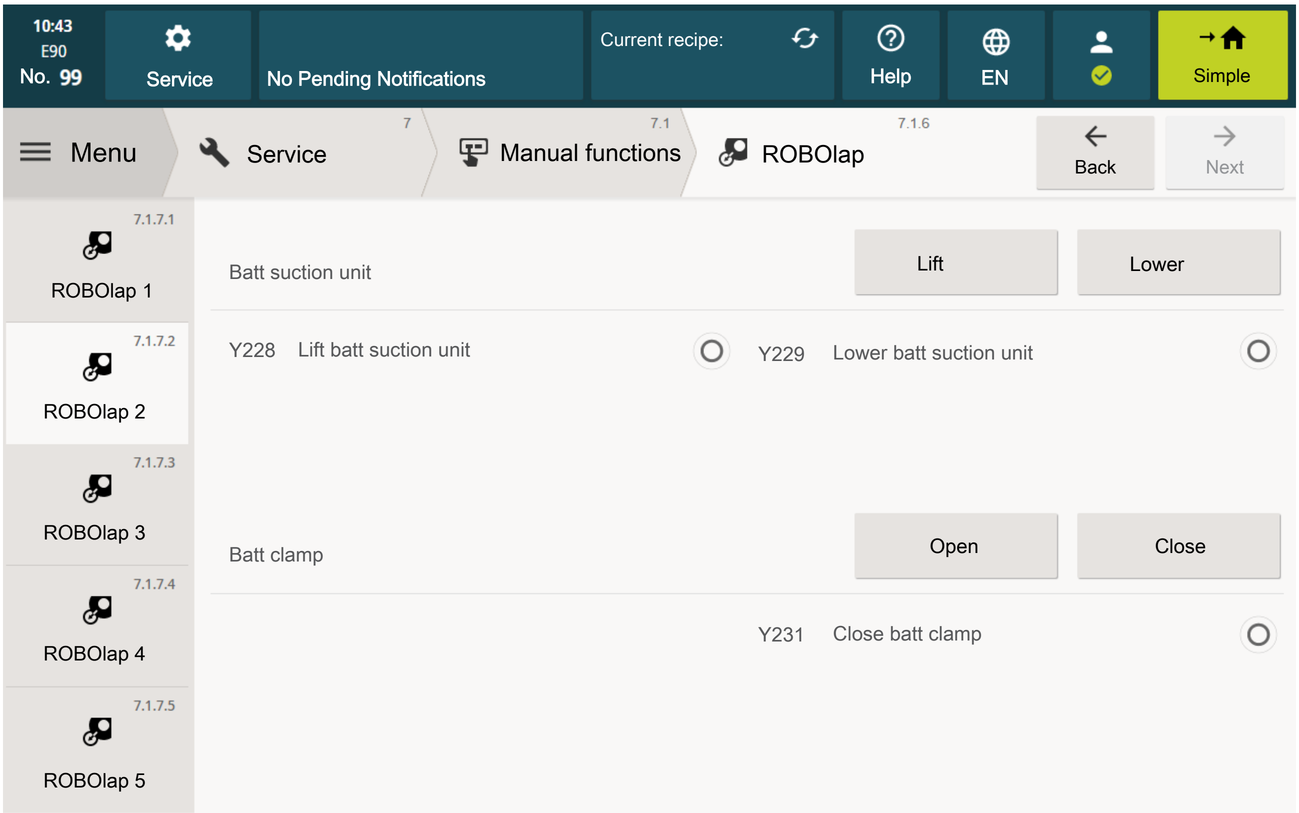
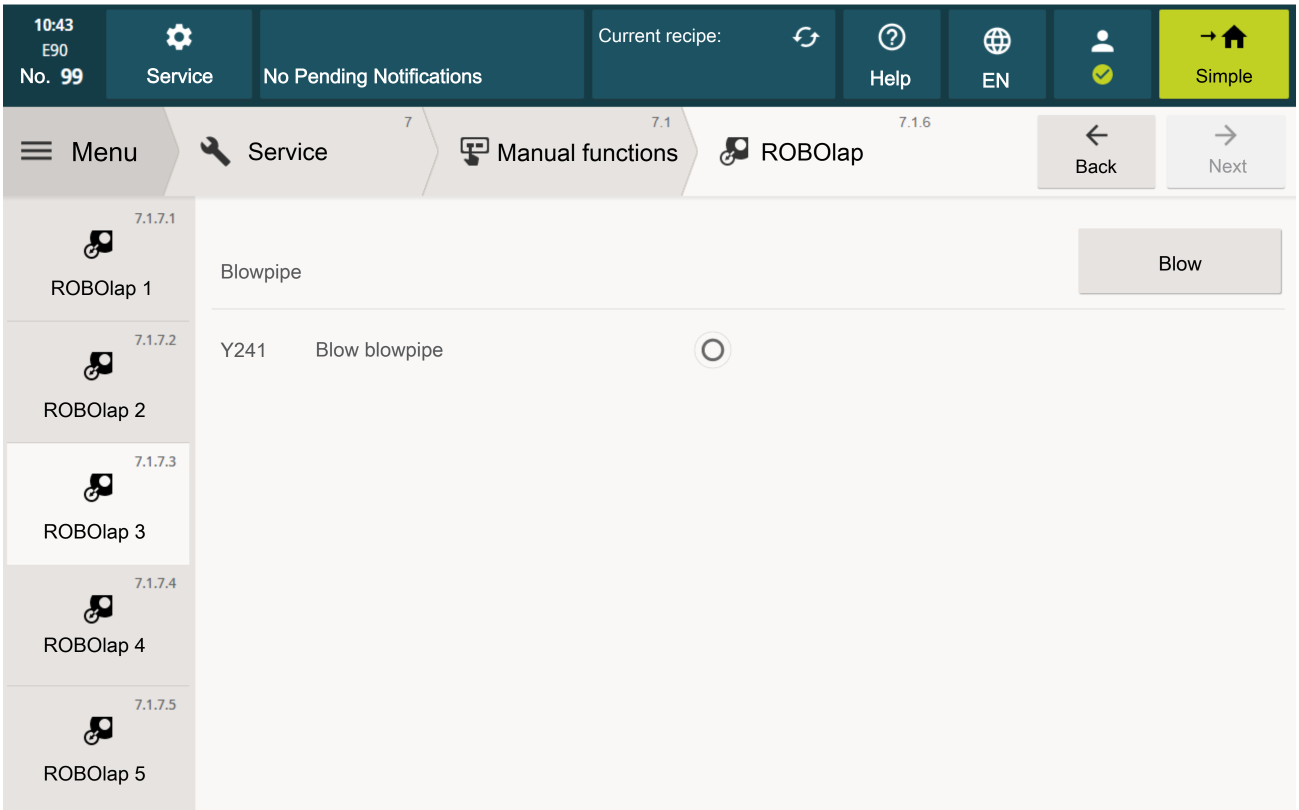

10:43
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.6
ROBOlap
Back
Next
7.1.7.1
ROBOlap 1
7.1.7.2
ROBOlap 2
7.1.7.3
ROBOlap 3
7.1.7.4
ROBOlap 4
7.1.7.5
ROBOlap 5
Batt suction unit
Lift
Lower
Y228 Lift batt suction unit ○
Y229 Lower batt suction unit ○
Batt clamp
Open
Close
Y231 Close batt clamp ○

Figure 289: Data screen 7.1.7.2 ROBOlap 2

If one key on this data screen is tapped, the related status indicators (*refer to ▸ 222*) change accordingly.

7.3.9.23 Data Screen 7.1.7.3 ROBOlap 3


10:43
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.6
ROBOlap
Back
Next
7.1.7.1
ROBOlap 1
7.1.7.2
ROBOlap 2
7.1.7.3
ROBOlap 3
7.1.7.4
ROBOlap 4
7.1.7.5
ROBOlap 5
Blowpipe
Blow

Y241 Blow blowpipe ○

Figure 290: Data screen 7.1.7.3 ROBOlap 3

The ROBOlap machine has the blowpipe 1 to help with the batt piecing (*refer to* ▸ *63*).

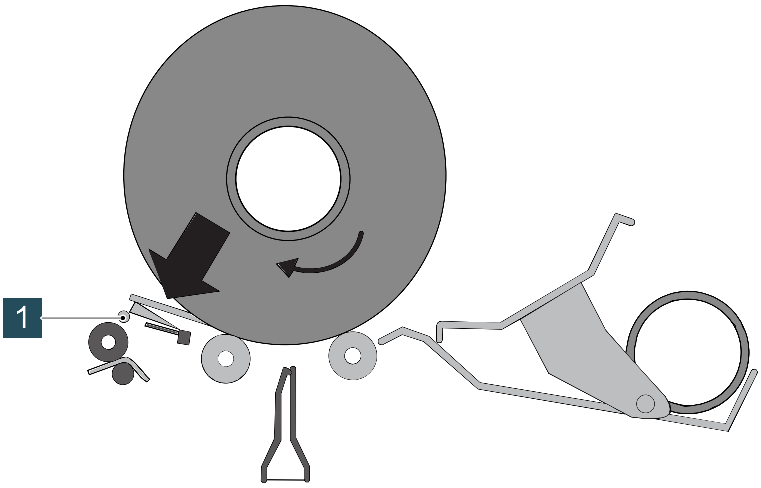
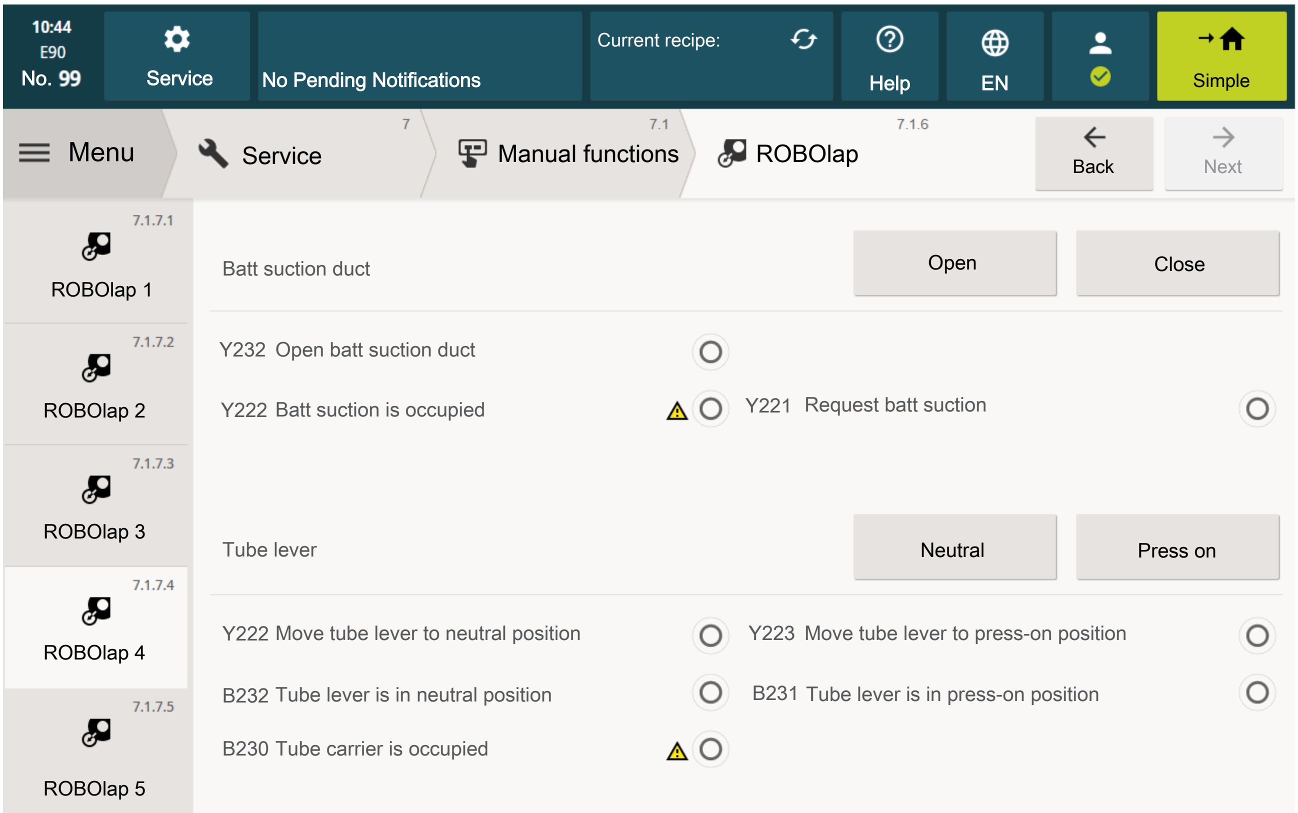


Figure 291: Blowpipe

To make the air blow from the blow pipe, the key **Blow** is to be tapped. Then the related status indicator (*refer to* ▸ *222*) changes accordingly.

7.3.9.24 Data Screen 7.1.7.4 ROBOlap 4


10:44
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
Manual functions
7.1
ROBOlap
7.1.6
Back
Next
7.1.7.1
ROBOlap 1
7.1.7.2
ROBOlap 2
7.1.7.3
ROBOlap 3
7.1.7.4
ROBOlap 4
7.1.7.5
ROBOlap 5
Open
Close
Neutral
Press on

Batt suction duct

Y232 Open batt suction duct ○

Y222 Batt suction is occupied ⚠ ○ Y221 Request batt suction ○

Tube lever

Y222 Move tube lever to neutral position ○ Y223 Move tube lever to press-on position ○

B232 Tube lever is in neutral position ○ B231 Tube lever is in press-on position ○

B230 Tube carrier is occupied ⚠ ○

Figure 292: Data screen 7.1.7.4 ROBOlap 4

Tube lever

The machine has the tube levers 1 to move the tube from the machine to the SERVOtrolley or SERVOlap.

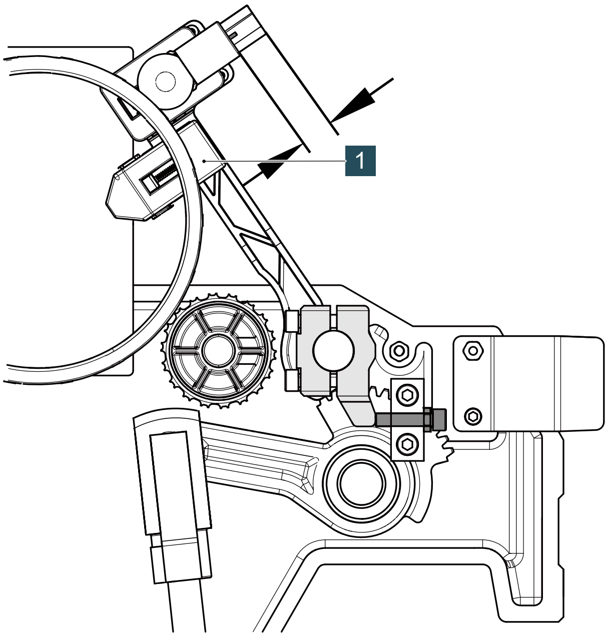
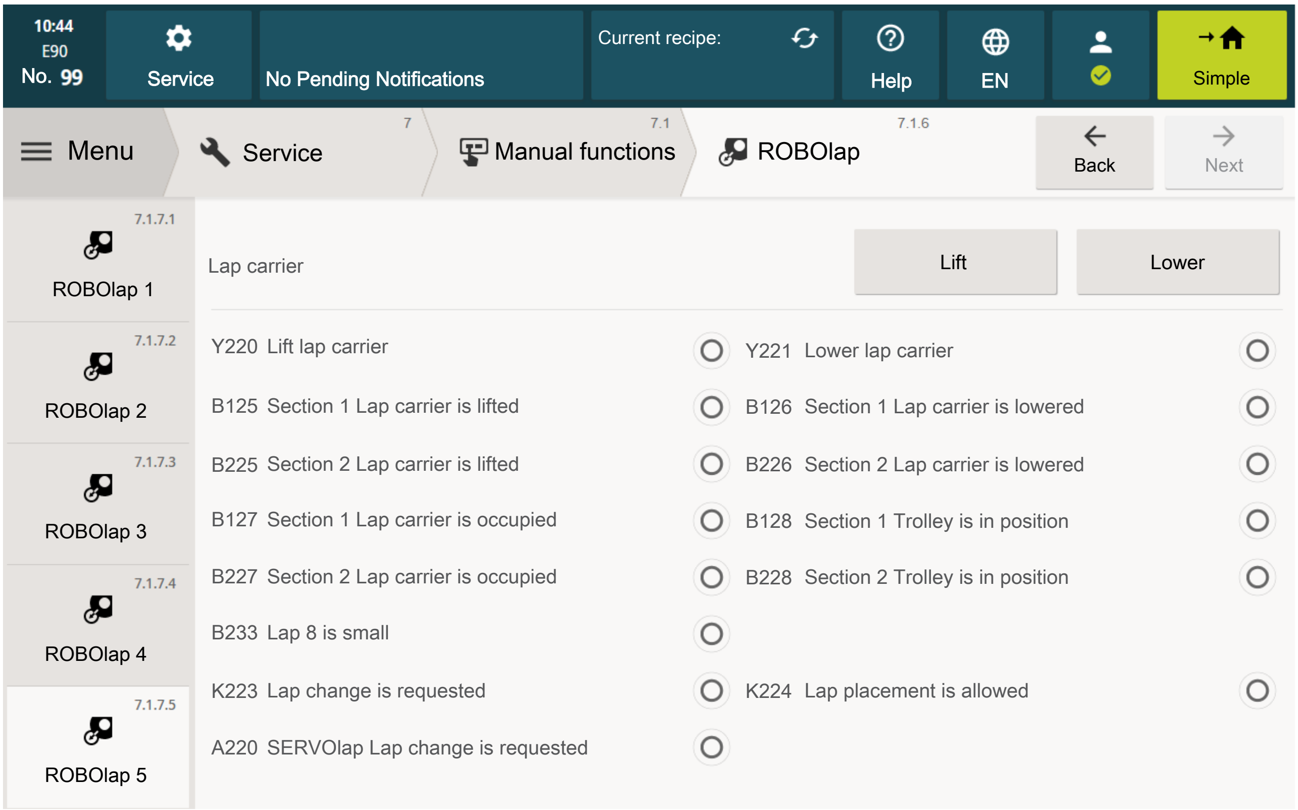


Figure 293: Pressed-on position of the tube lever

To make the tube lever go to the pressed-on position or go back to the neutral position, the keys in this field are to be tapped. Then the related status indicators (*refer to ▸ 222*) change accordingly.

7.3.9.25 Data Screen 7.1.7.5 ROBOlap 5 (for SERVOlap)


10:44
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.1
Manual functions
7.1.6
ROBOlap
Back
Next
7.1.7.1
ROBOlap 1
7.1.7.2
ROBOlap 2
7.1.7.3
ROBOlap 3
7.1.7.4
ROBOlap 4
7.1.7.5
ROBOlap 5
Lap carrier
Lift
Lower

Y220 Lift lap carrier	○	Y221 Lower lap carrier	○
B125 Section 1 Lap carrier is lifted	○	B126 Section 1 Lap carrier is lowered	○
B225 Section 2 Lap carrier is lifted	○	B226 Section 2 Lap carrier is lowered	○
B127 Section 1 Lap carrier is occupied	○	B128 Section 1 Trolley is in position	○
B227 Section 2 Lap carrier is occupied	○	B228 Section 2 Trolley is in position	○
B233 Lap 8 is small	○		
K223 Lap change is requested	○	K224 Lap placement is allowed	○
A220 SERVOlap Lap change is requested	○		

Figure 294: Data screen 7.1.7.5 ROBOlap 5

Lap carrier

The machine has the lap carrier to store the full laps that are supplied by SERVOlap.

To lift and lower the lap carrier, the keys on this data screen are to be tapped. Then the related status indicators (*refer to ▸ 222*) change accordingly.

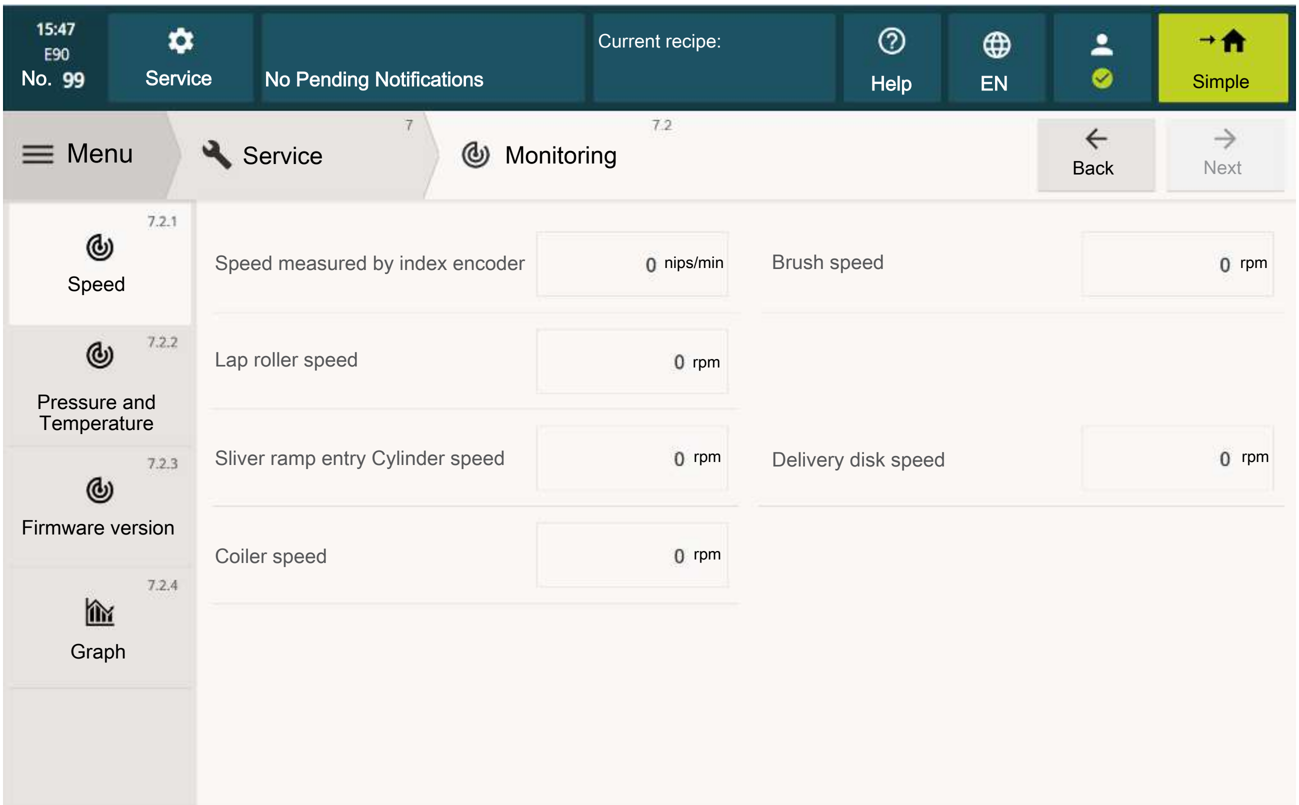
K223 Lap change is requested:

If the machine is ready to receive laps from SERVOlap, this status indicator is green.

K224 Lap placement is allowed:

If the lap carriers are lifted, the status indicator of the parameter changes to green.

7.3.9.26 Data Screen 7.2.1 Speed

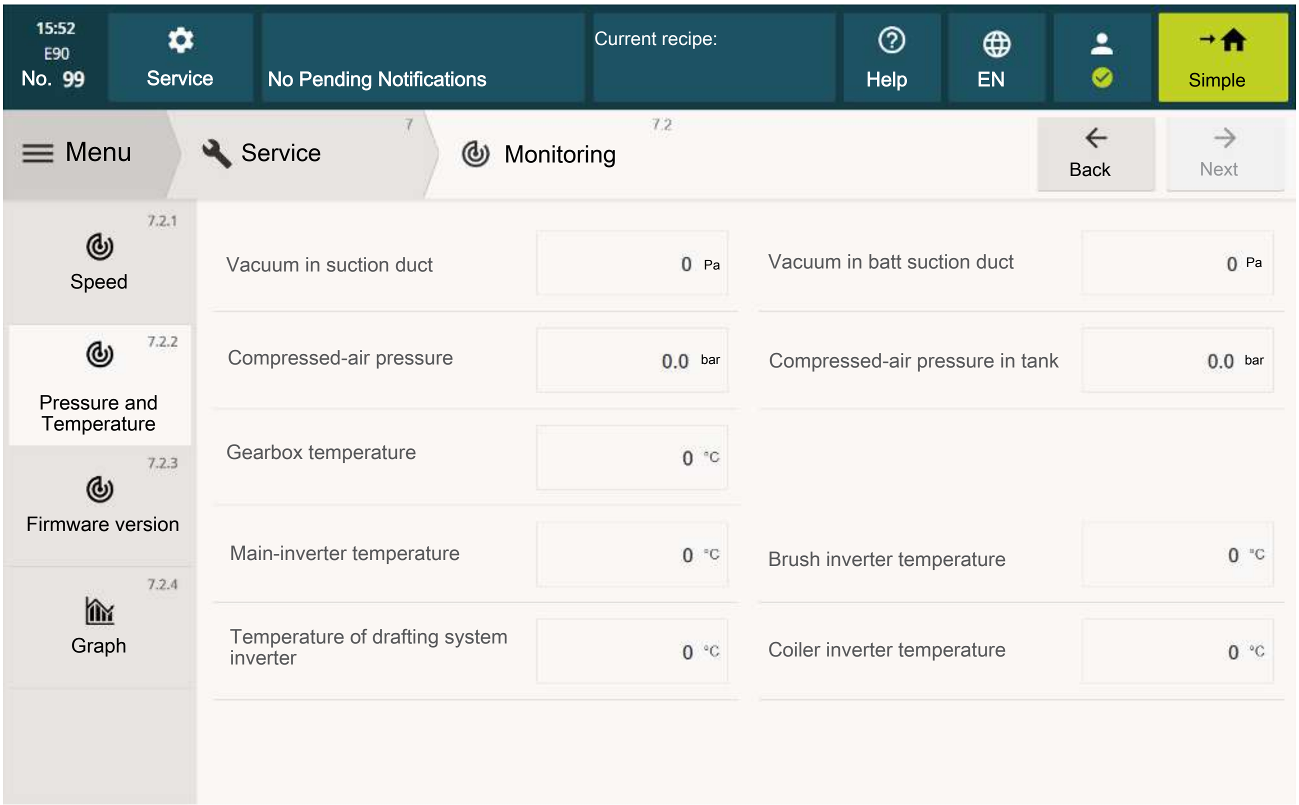

15:47
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.2
Monitoring
Back
Next
7.2.1
Speed
7.2.2
Pressure and Temperature
7.2.3
Firmware version
7.2.4
Graph

Speed measured by index encoder: 0 nips/min
Lap roller speed: 0 rpm
Sliver ramp entry Cylinder speed: 0 rpm
Coiler speed: 0 rpm
Brush speed: 0 rpm
Delivery disk speed: 0 rpm

Figure 295: Data screen 7.2.1 Speed

This data screen shows the current speed of the motors at the head stock and the speed of the sliver delivery parts.

7.3.9.27 Data Screen 7.2.2 Pressure and Temperature


15:52
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
Monitoring
7.2
Back
Next
7.2.1
Speed
7.2.2
Pressure and Temperature
7.2.3
Firmware version
7.2.4
Graph

Vacuum in suction duct 0 Pa

Vacuum in batt suction duct 0 Pa

Compressed-air pressure 0.0 bar

Compressed-air pressure in tank 0.0 bar

Gearbox temperature 0 °C

Main-inverter temperature 0 °C

Brush inverter temperature 0 °C

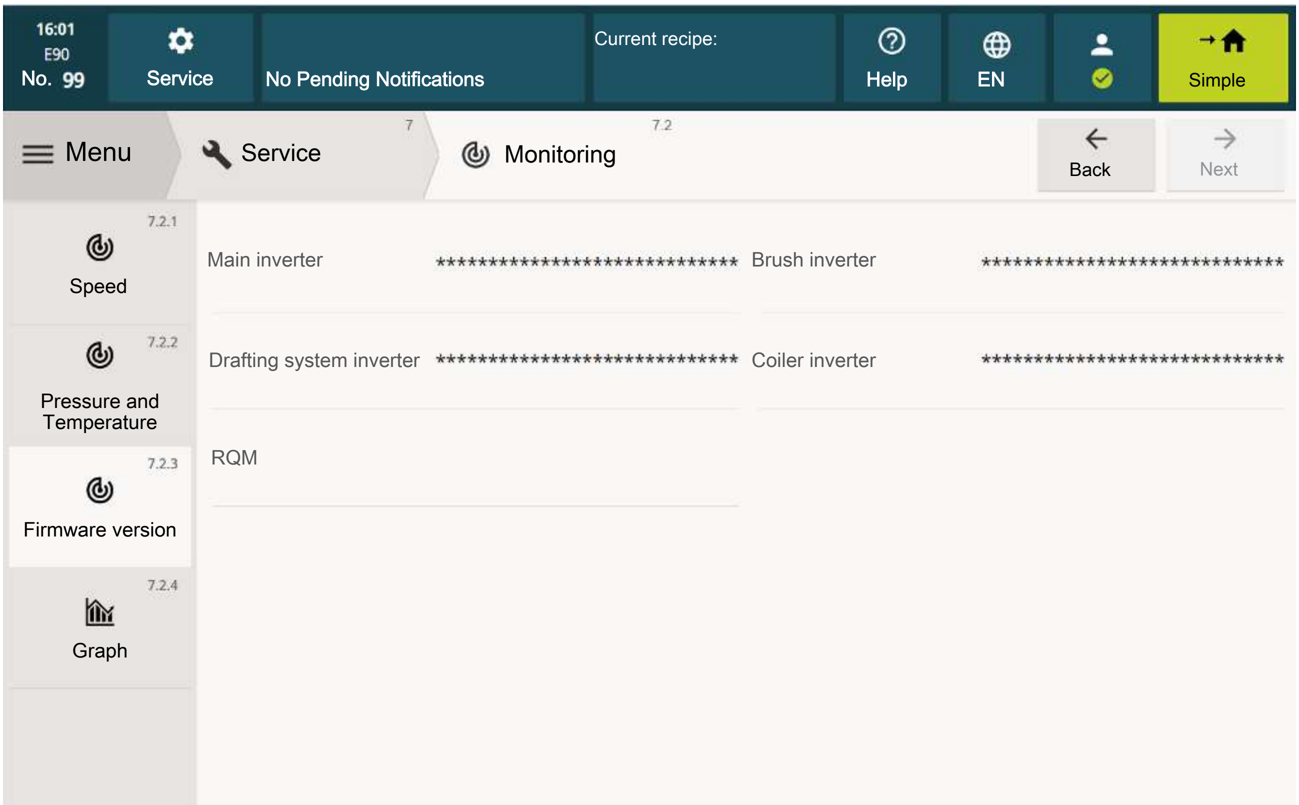
Temperature of drafting system inverter 0 °C

Coiler inverter temperature 0 °C

Figure 296: Data screen 7.2.2 Pressure and Temperature

This data screen shows the current data of the vacuum, the pressure, and the temperature at the machine.

7.3.9.28 Data Screen 7.2.3 Firmware Version

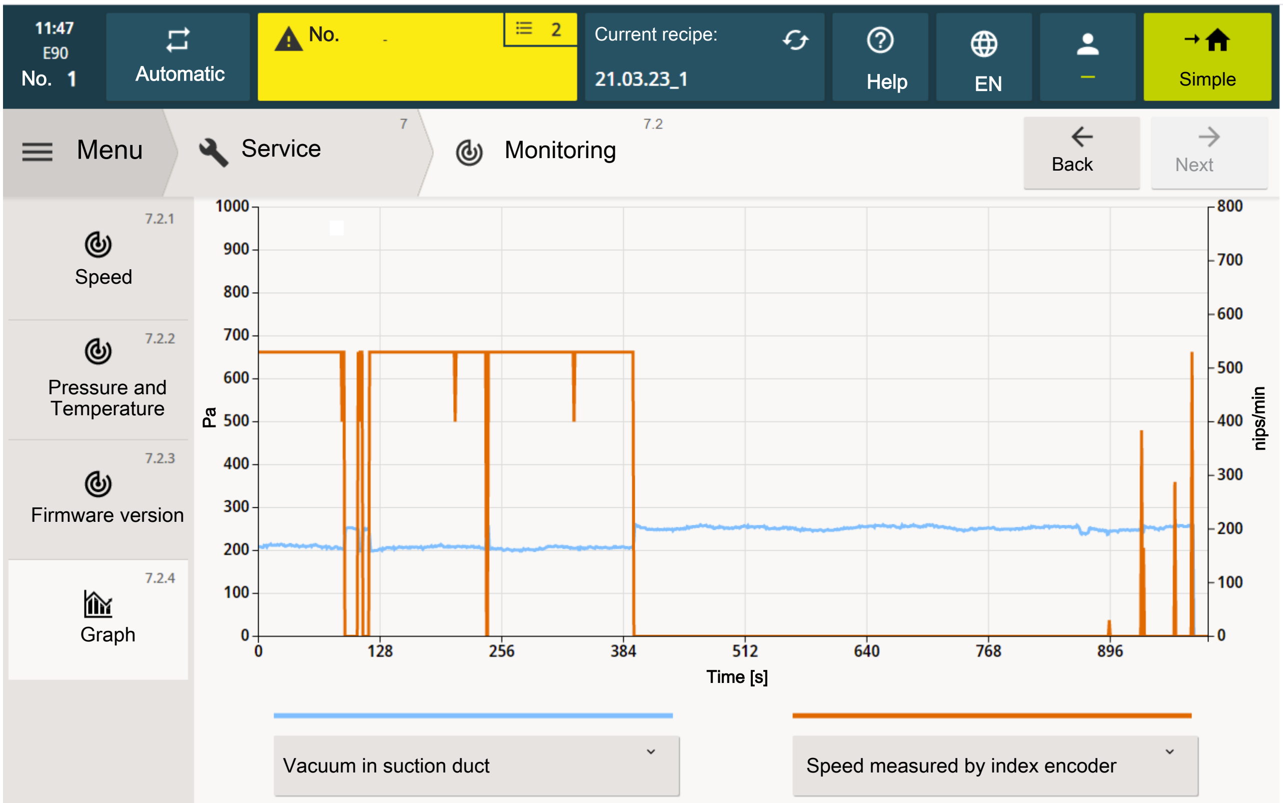

16:01
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
Monitoring
7.2
Back
Next
7.2.1
Speed
7.2.2
Pressure and Temperature
7.2.3
Firmware version
7.2.4
Graph

Main inverter *******************************
Brush inverter *******************************
Drafting system inverter *******************************
Coiler inverter *******************************
RQM

Figure 297: Data screen 7.2.3 Firmware version

This data screen shows the firmware version information.

7.3.9.29 Data Screen 7.2.4 Graph



11:47
E90
No. 1

Current recipe: 21.03.23_1

Vacuum in suction duct

Speed measured by index encoder

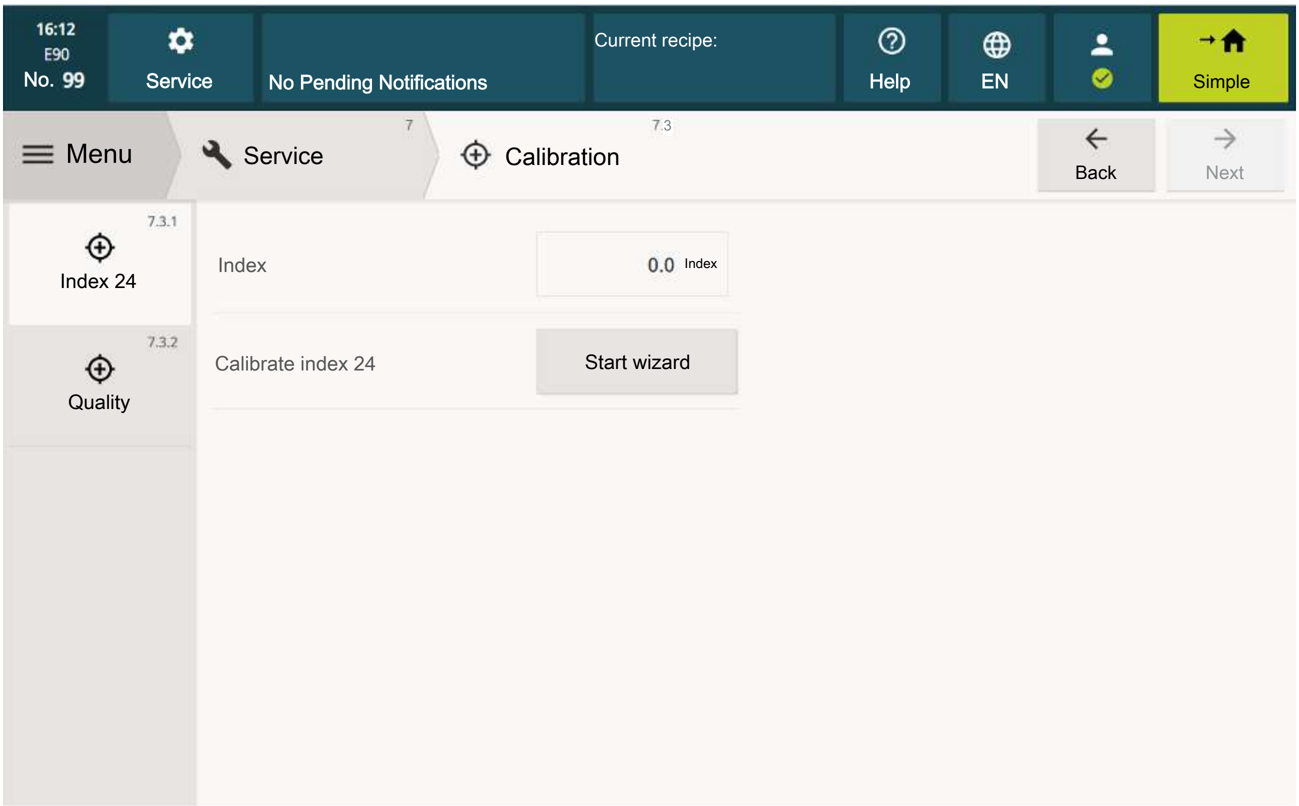
Automatic
No. -
2
Help
EN
–
Simple
Menu
Service
7
Monitoring
7.2
Back
Next
7.2.1
Speed
7.2.2
Pressure and Temperature
7.2.3
Firmware version
7.2.4
Graph
Pa
1000
900
800
700
600
500
400
300
200
100
0
0
128
256
384
512
640
768
896
Time [s]
nips/min
800
700
600
500
400
300
200
100
0

Figure 298: Data screen 7.2.4 Graph

In this data screen, the below parameters can be shown in the graph:

- Pressure applied to the detaching rollers
- Compressed-air pressure
- Vacuum in suction duct
- Lap length
- Speed measured by index encoder
- Compressed-air pressure in tank
- Vacuum in batt suction duct
- Can filling
- A%
- CVm

7.3.9.30 Data Screen 7.3.1 Index 24


16:12
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.3
Calibration
Back
Next
7.3.1
Index 24
7.3.2
Quality
Start wizard

Index 0.0 Index

Calibrate index 24

Figure 299: Data screen 7.3.1 Index 24

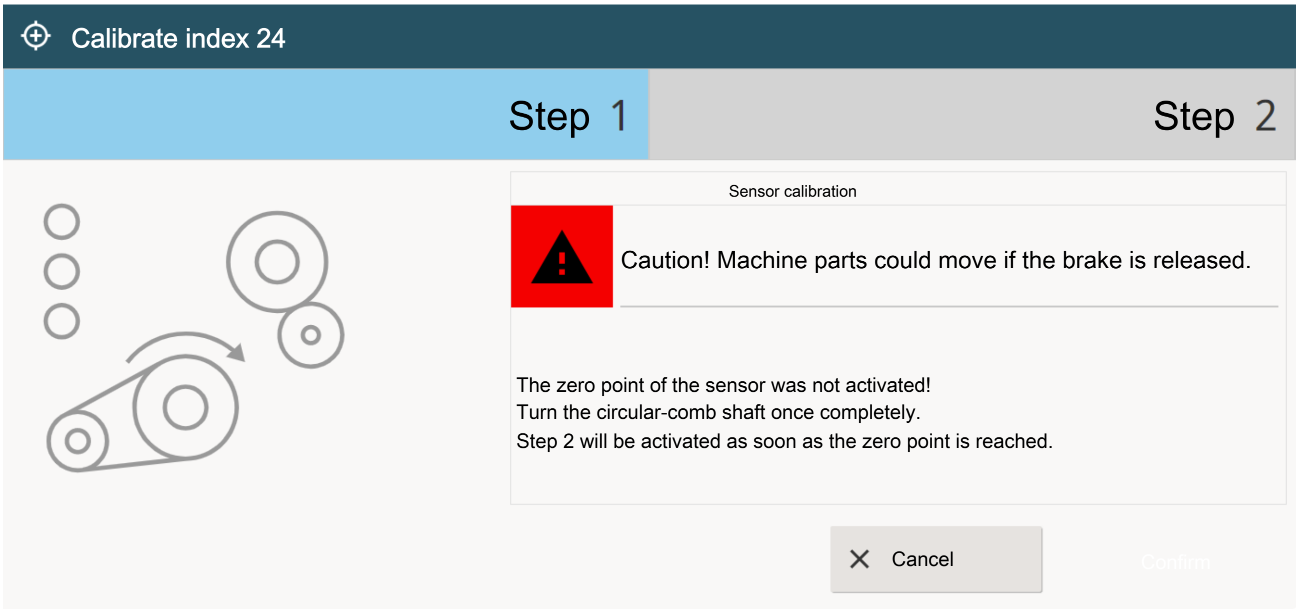
Index

This field shows the current machine index.

Calibrate index 24

Only when the machine is at index 24 and locked, the detaching distance can be set.

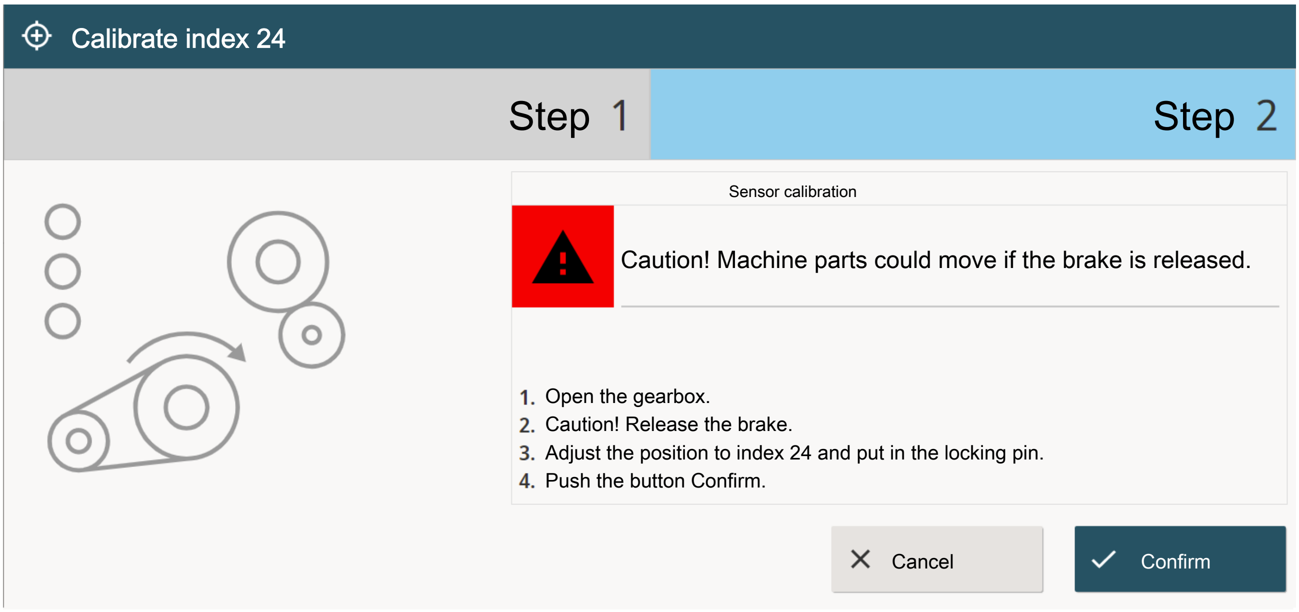
To set the machine at index 24 correctly, the procedure that is shown after tapping the key **Start wizard** is to be obeyed. This function is only available if the safety circuit is closed and the machine is set to service mode.


Calibrate index 24
Step 1
Step 2
Sensor calibration
Cancel
Confirm

Caution! Machine parts could move if the brake is released.

The zero point of the sensor was not activated!
Turn the circular-comb shaft once completely.
Step 2 will be activated as soon as the zero point is reached.

Figure 300: Calibrate index 24_step 1

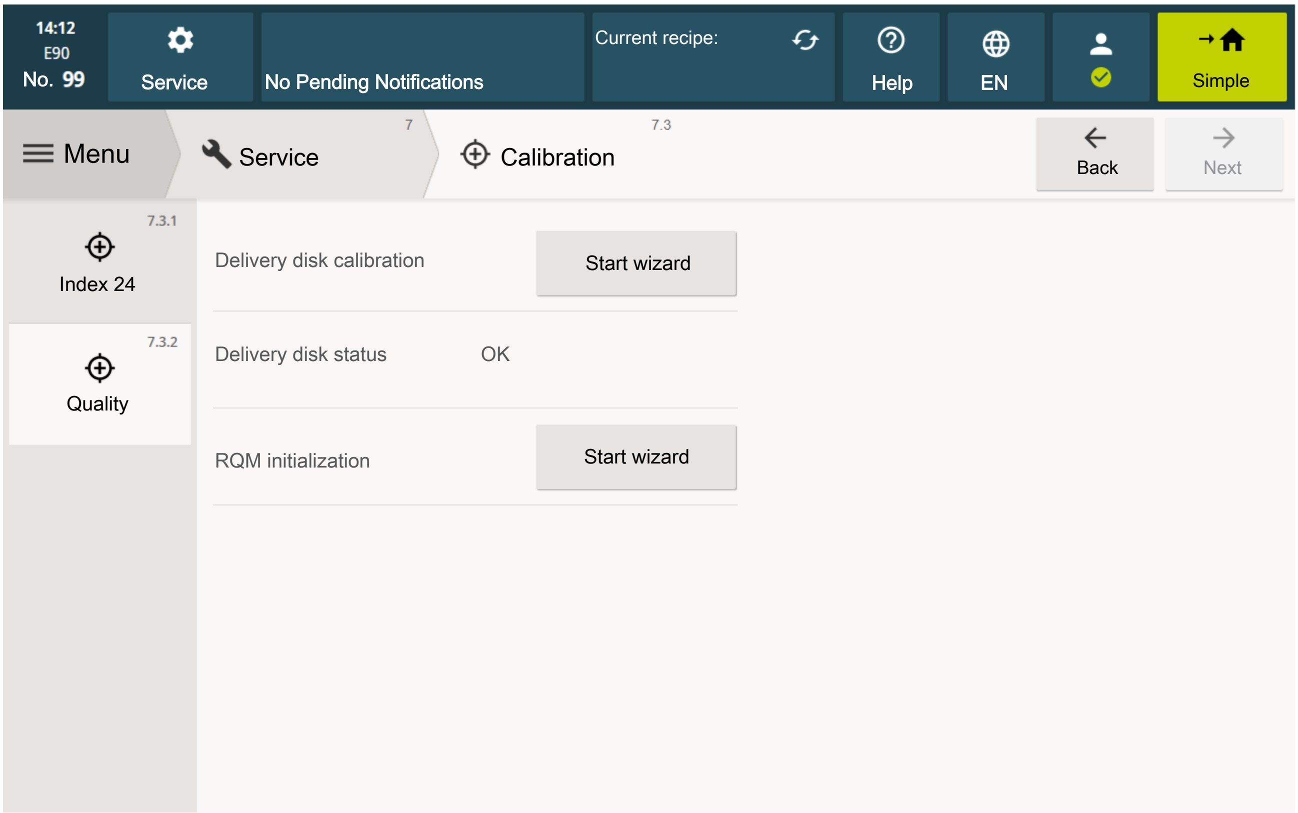

Calibrate index 24
Step 1
Step 2
Sensor calibration
Cancel
Confirm

Caution! Machine parts could move if the brake is released.

1. Open the gearbox.
2. Caution! Release the brake.
3. Adjust the position to index 24 and put in the locking pin.
4. Push the button Confirm.

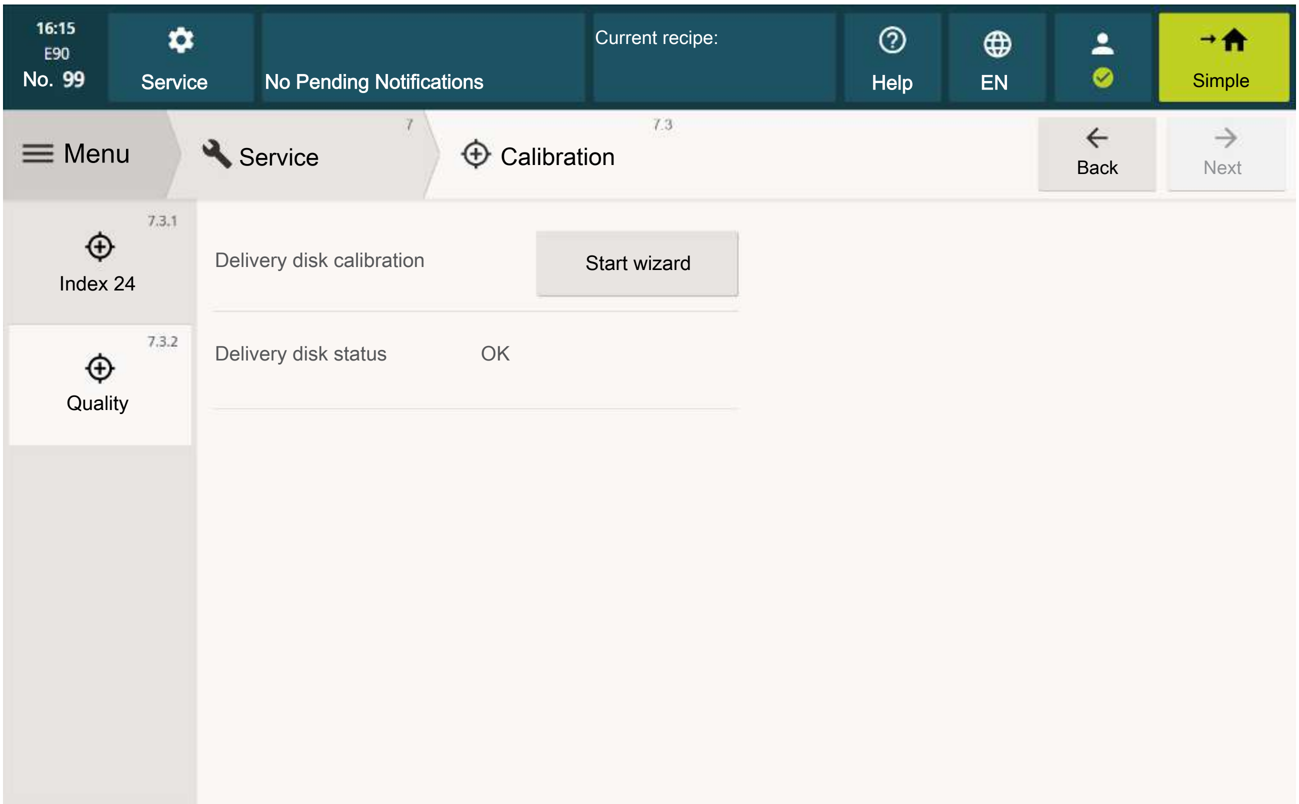
Figure 301: Calibrate index 24_step 2

7.3.9.31 Data Screen 7.3.2 Quality


14:12
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
Calibration
7.3
Back
Next
7.3.1
Index 24
7.3.2
Quality

Delivery disk calibration	Start wizard
Delivery disk status	OK
RQM initialization	Start wizard

Figure 302: Data screen 7.3.2 Quality (with RQM)


16:15
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
Calibration
7.3
Back
Next
7.3.1
Index 24
7.3.2
Quality
Start wizard

Delivery disk calibration

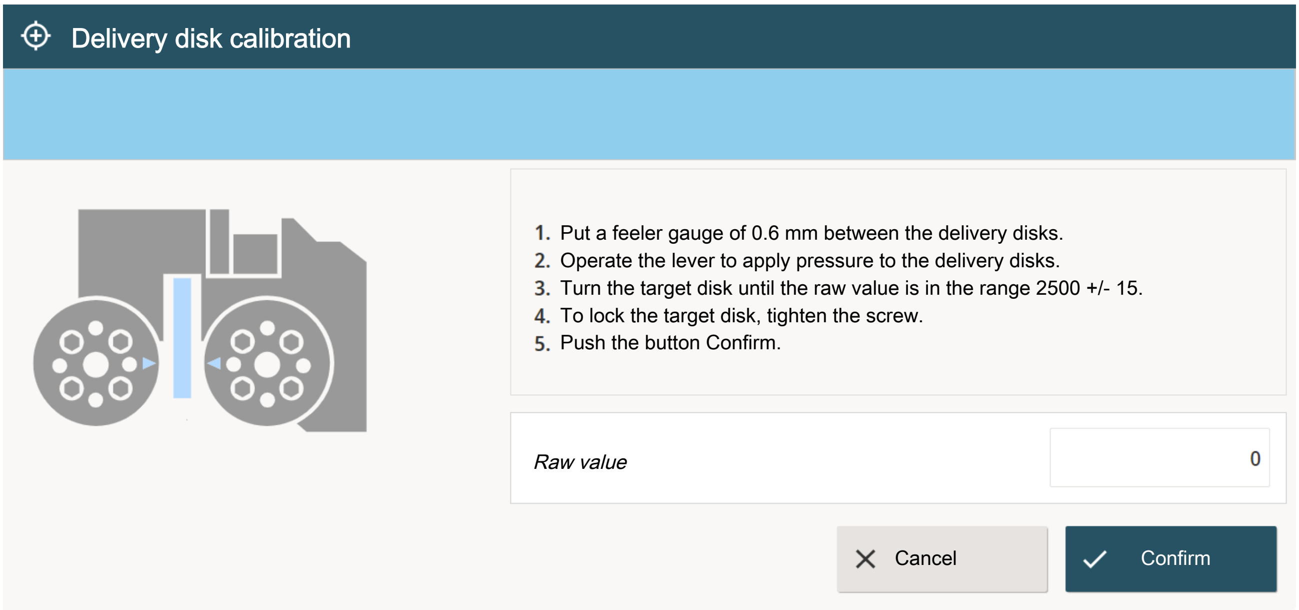
Delivery disk status OK

Figure 303: Data screen 7.3.2 Quality (without RQM)

Delivery disk calibration

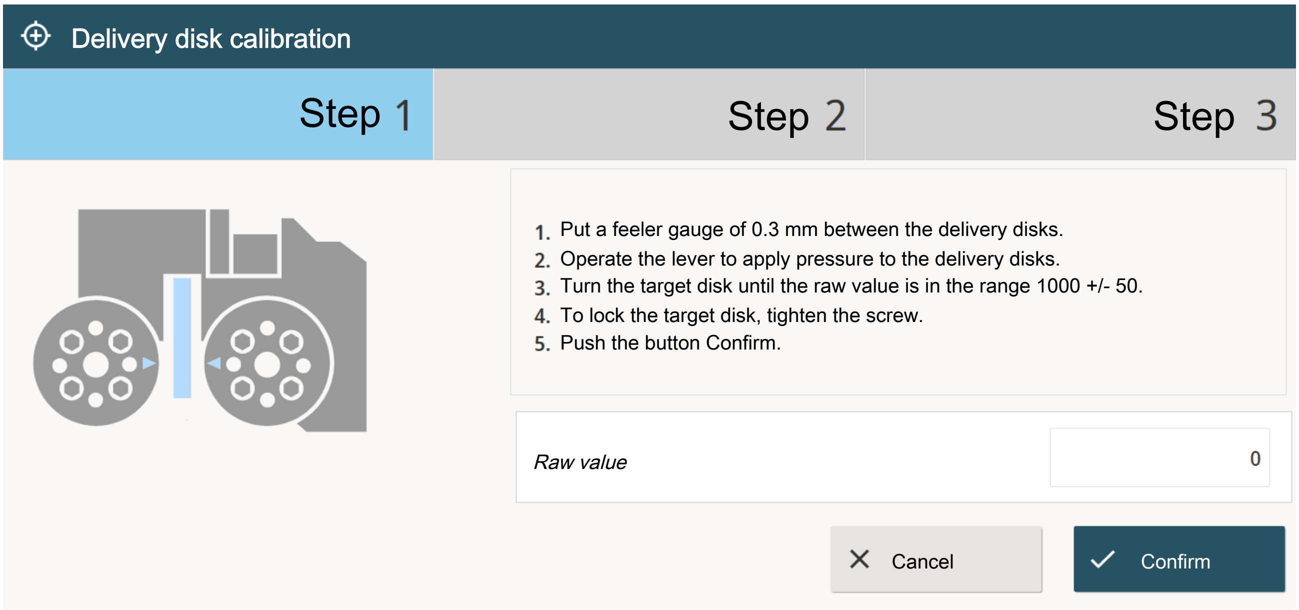
To set a basic distance between the sensor and the target disk, the delivery disks must be calibrated.

To calibrate the delivery disks correctly, the procedure that is shown after tapping the key **Start wizard** is to be obeyed. The procedure for the RQM and standard sensor (without RQM) is different.


Delivery disk calibration
Raw value
0
Cancel
Confirm

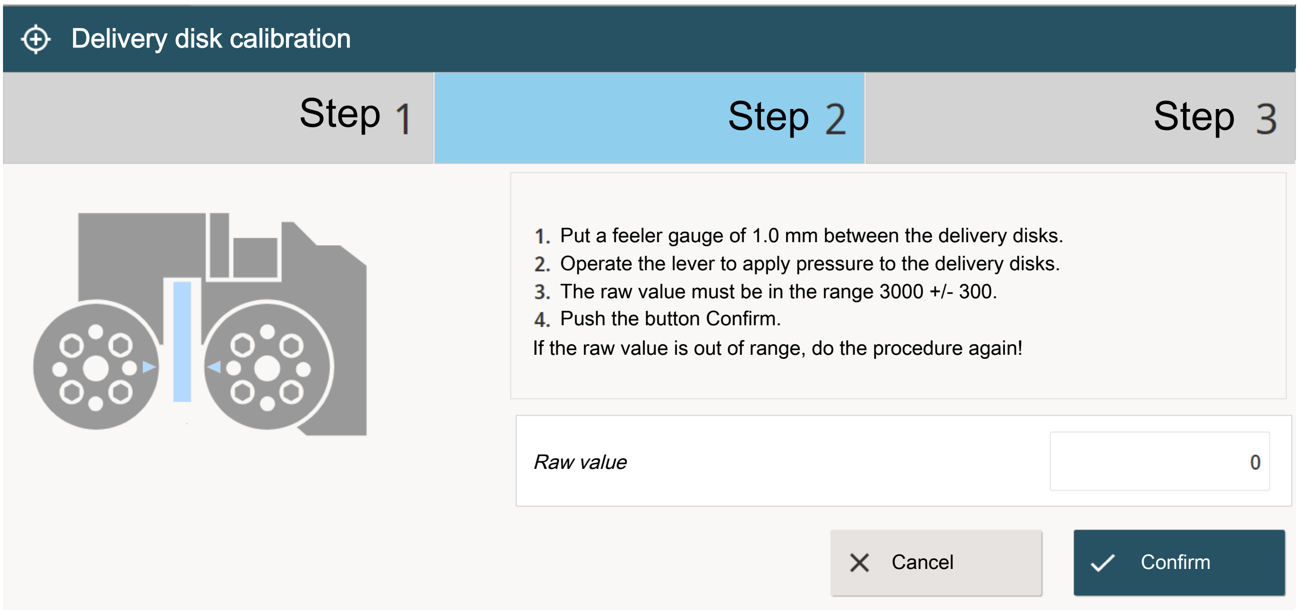
1. Put a feeler gauge of 0.6 mm between the delivery disks.
2. Operate the lever to apply pressure to the delivery disks.
3. Turn the target disk until the raw value is in the range 2500 +/- 15.
4. To lock the target disk, tighten the screw.
5. Push the button Confirm.

Figure 304: Delivery disk calibration (with RQM)


Delivery disk calibration
Step 1
Step 2
Step 3
Raw value
0
Cancel
Confirm

1. Put a feeler gauge of 0.3 mm between the delivery disks.
2. Operate the lever to apply pressure to the delivery disks.
3. Turn the target disk until the raw value is in the range 1000 +/- 50.
4. To lock the target disk, tighten the screw.
5. Push the button Confirm.

Figure 305: Delivery disk calibration_step 1 (without RQM)


Delivery disk calibration
Step 1
Step 2
Step 3

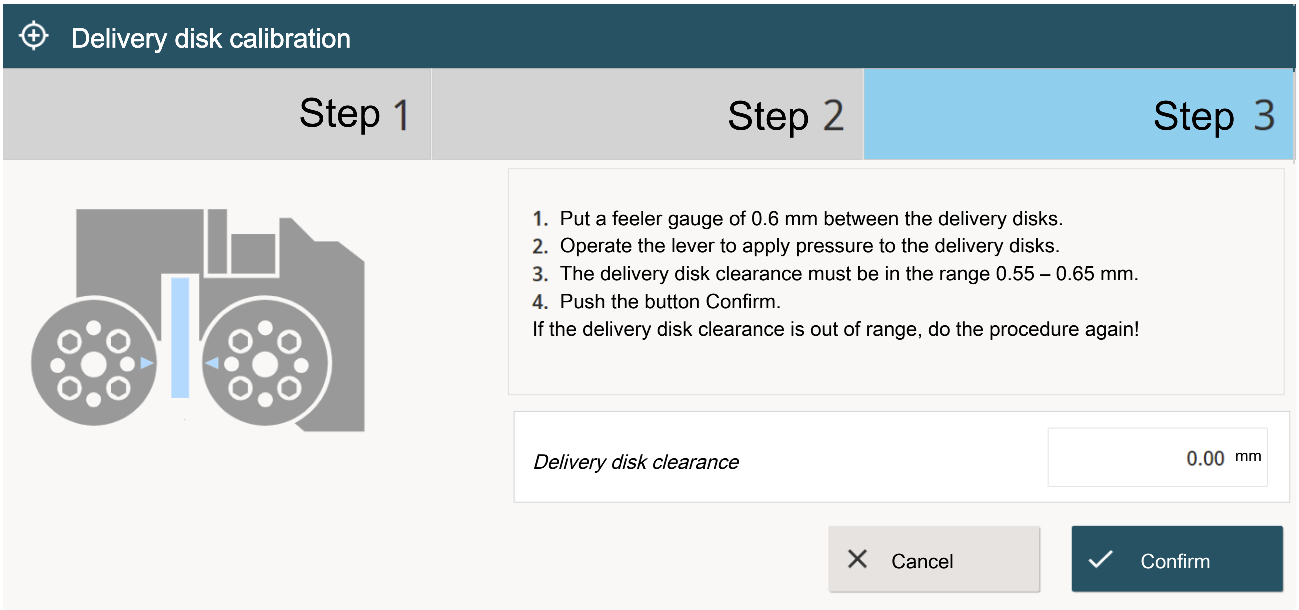
1. Put a feeler gauge of 1.0 mm between the delivery disks.
2. Operate the lever to apply pressure to the delivery disks.
3. The raw value must be in the range 3000 +/- 300.
4. Push the button Confirm.

If the raw value is out of range, do the procedure again!

Raw value 0

Cancel
Confirm

Figure 306: Delivery disk calibration_step 2 (without RQM)


Delivery disk calibration
Step 1
Step 2
Step 3

1. Put a feeler gauge of 0.6 mm between the delivery disks.
2. Operate the lever to apply pressure to the delivery disks.
3. The delivery disk clearance must be in the range 0.55 – 0.65 mm.
4. Push the button Confirm.

If the delivery disk clearance is out of range, do the procedure again!

Delivery disk clearance 0.00 mm

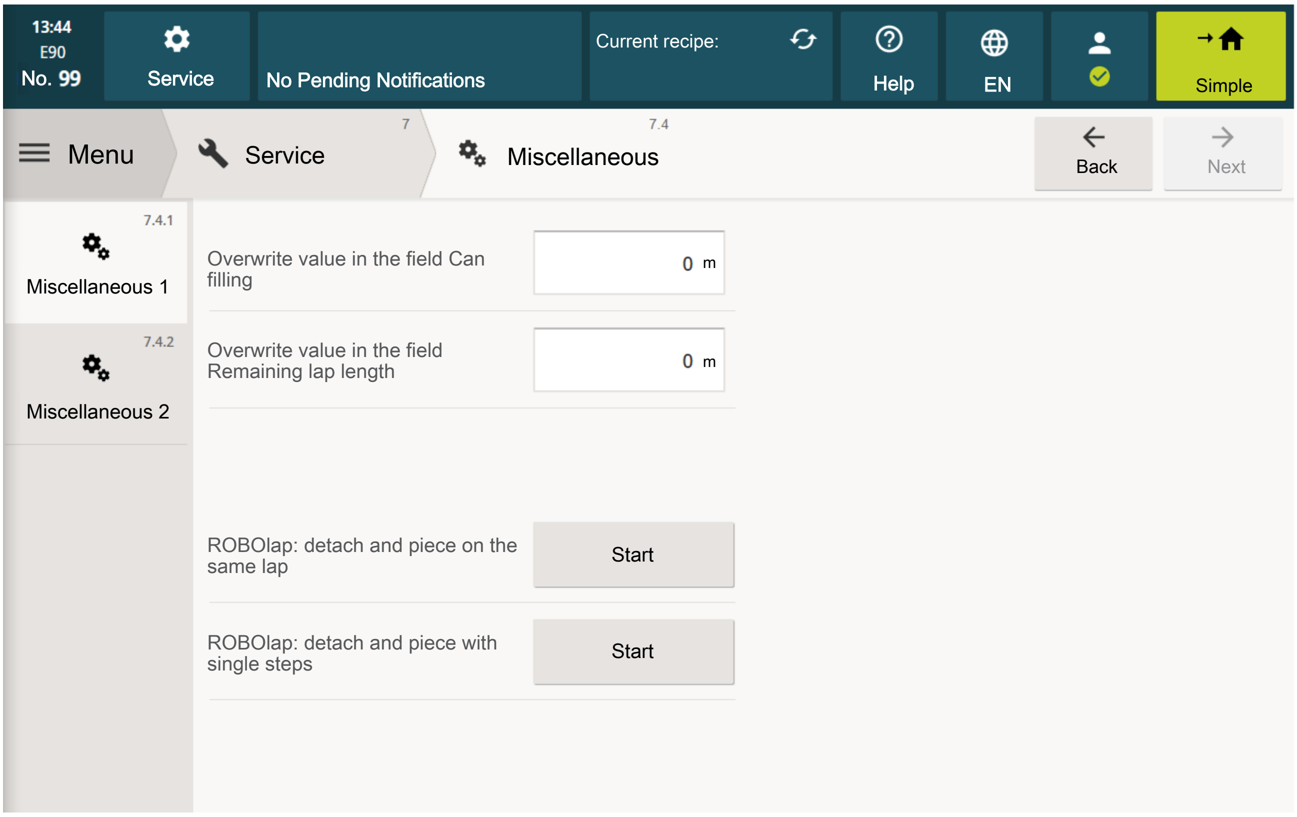
Cancel
Confirm

Figure 307: Delivery disk calibration_step 3 (without RQM)

RQM initialization

Before the machine starts to be used, the RQM module needs to be initialized. The initialization needs to be done only one time in the life cycle of RQM module.

7.3.9.32 Data Screen 7.4.1 Miscellaneous 1


13:44
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
7.4
Miscellaneous
Back
Next
7.4.1
Miscellaneous 1
7.4.2
Miscellaneous 2
Start
Start

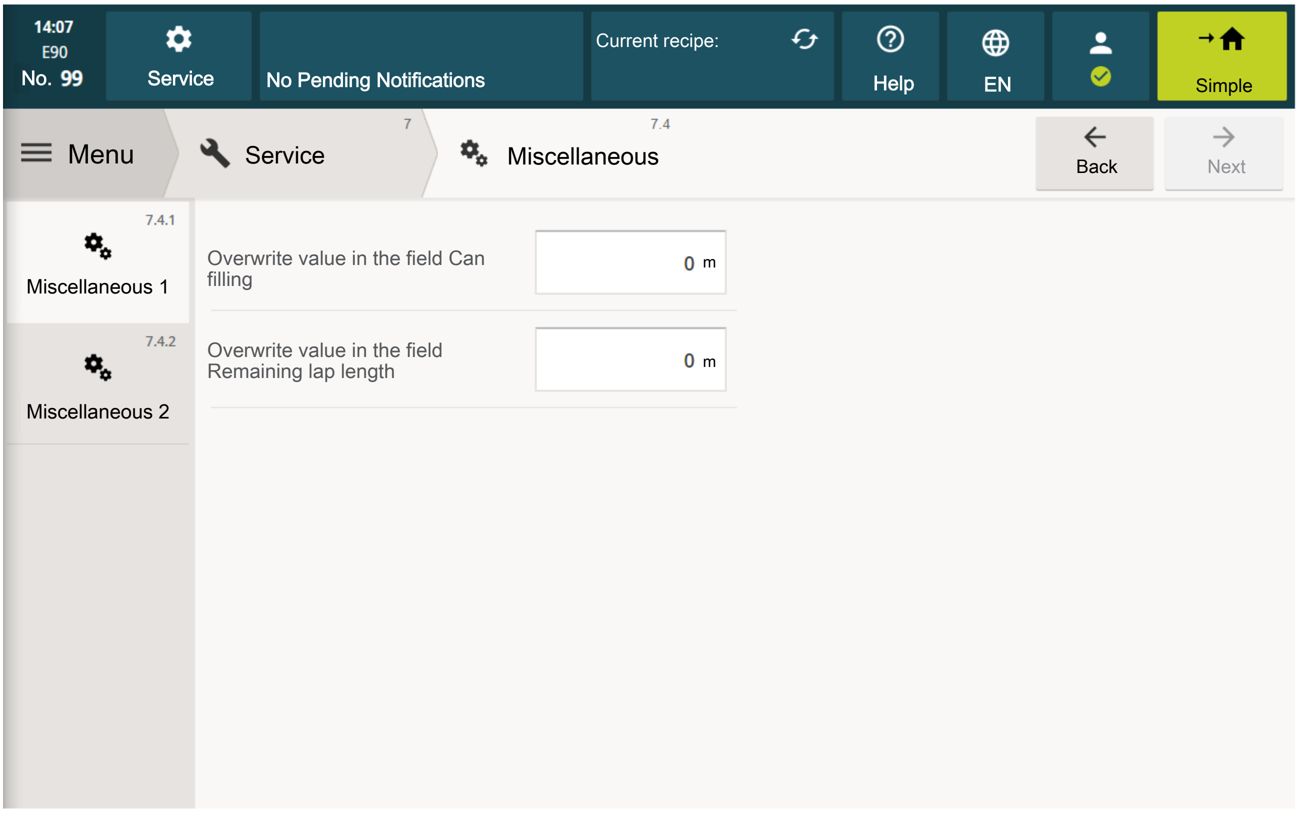
Overwrite value in the field Can filling: 0 m

Overwrite value in the field Remaining lap length: 0 m

ROBOlap: detach and piece on the same lap

ROBOlap: detach and piece with single steps

Figure 308: Data screen 7.4.1 Miscellaneous 1 (with ROBOlap)


14:07
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Service
7
7.4
Miscellaneous
Back
Next
7.4.1
Miscellaneous 1
7.4.2
Miscellaneous 2

Overwrite value in the field Can filling: 0 m

Overwrite value in the field Remaining lap length: 0 m

Figure 309: Data screen 7.4.1 Miscellaneous 1 (without ROBOlap)

Overwrite value in the field Can filling

The current can filling can be overwritten with this field. For example, if a half full can is put into the machine, the can filling value can be changed in this field.

The current data of can filling is shown on the data screen of simple mode.

Overwrite value in the field Remaining lap length

The current length of the laps can be overwritten with this field. For example, if small laps are put onto the machine, the remaining lap length can be changed in this field.

The length of the current remaining lap is shown on the data screen of simple mode.

ROBOlap: detach and piece on the same lap

To adjust the ROBOlap, a lap change can be done without really changing the lap. This procedure does all the ROBOlap procedure except from changing the laps. Large laps are necessary for ROBOlap to work.

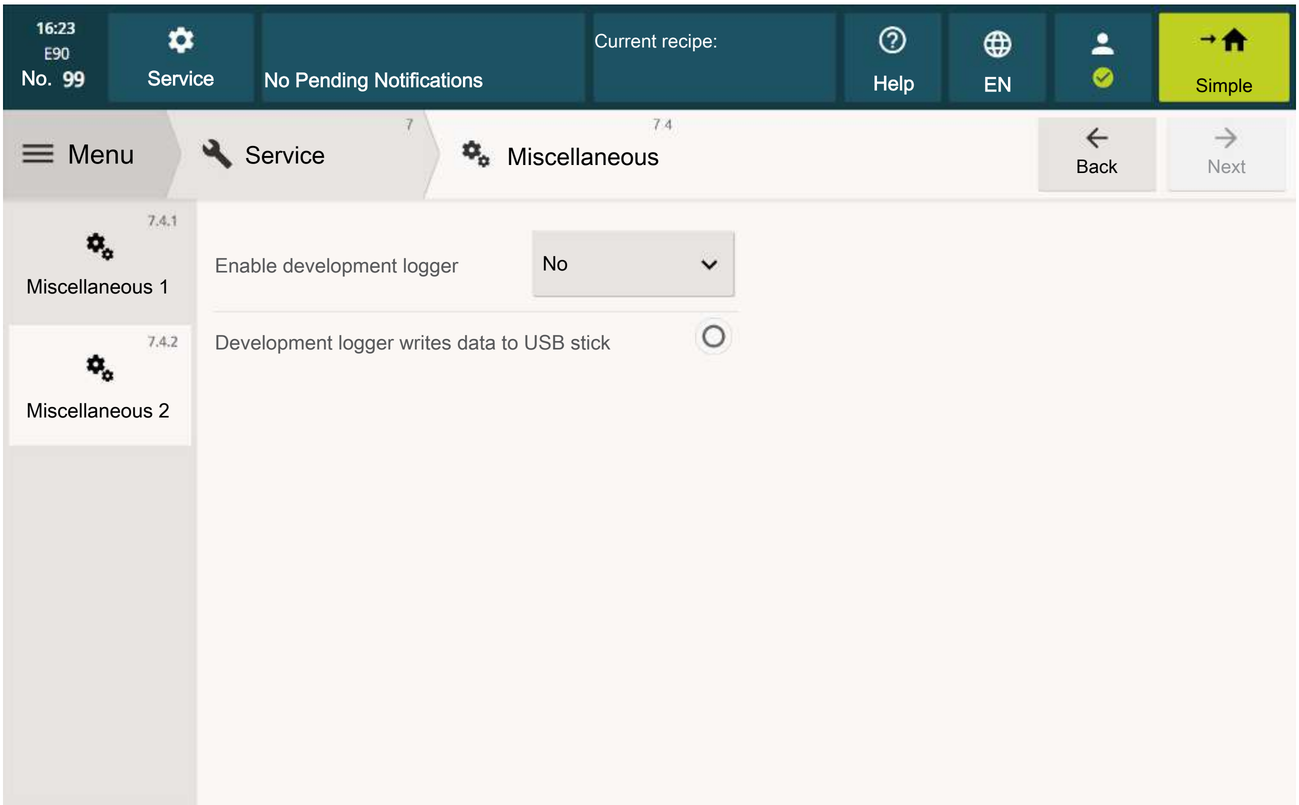
This function can be used to repair the ROBOlap if there is the ROBOlap failure or the ROBOlap procedure is canceled by changing to service mode.

ROBOlap: detach and piece with single steps

This function does the same procedure as **ROBOlap: detach and piece on the same lap**, but the difference is, the ROBOlap will stop on specified positions with a fault message **1552 ROBOlap Stop after single step**.

This function can be used to examine the batt after most of the ROBOlap steps.

7.3.9.33 Data Screen 7.4.2 Miscellaneous 2


16:23
E90
No. 99
Service
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
7
Service
7.4
Miscellaneous
Back
Next
7.4.1
Miscellaneous 1
7.4.2
Miscellaneous 2

Enable development logger: No

Development logger writes data to USB stick ○

Figure 310: Data screen 7.4.2 Miscellaneous 2

Enable development logger

For problem analysis, the log files can be written to a USB stick. A USB stick must be engaged into the PLC (in control cabinet 2, not on the operating unit). Then the development logger is enabled.

Development logger writes data to USB stick

A green light shows that the logger is writing files.

The log files on the USB stick can be sent to Rieter for analysis.

7.3.10 Data Screen 8 General Settings

This section contains the information about the general settings of the data screen.

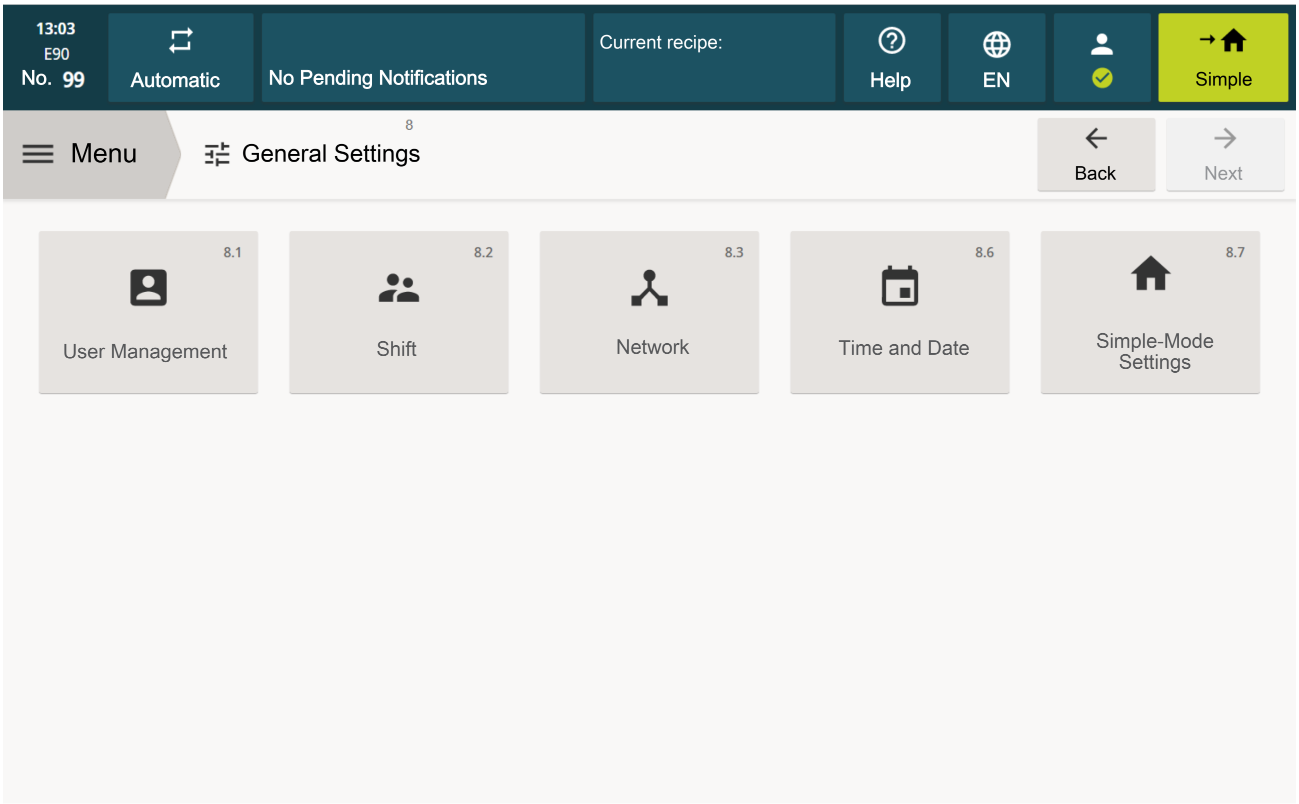
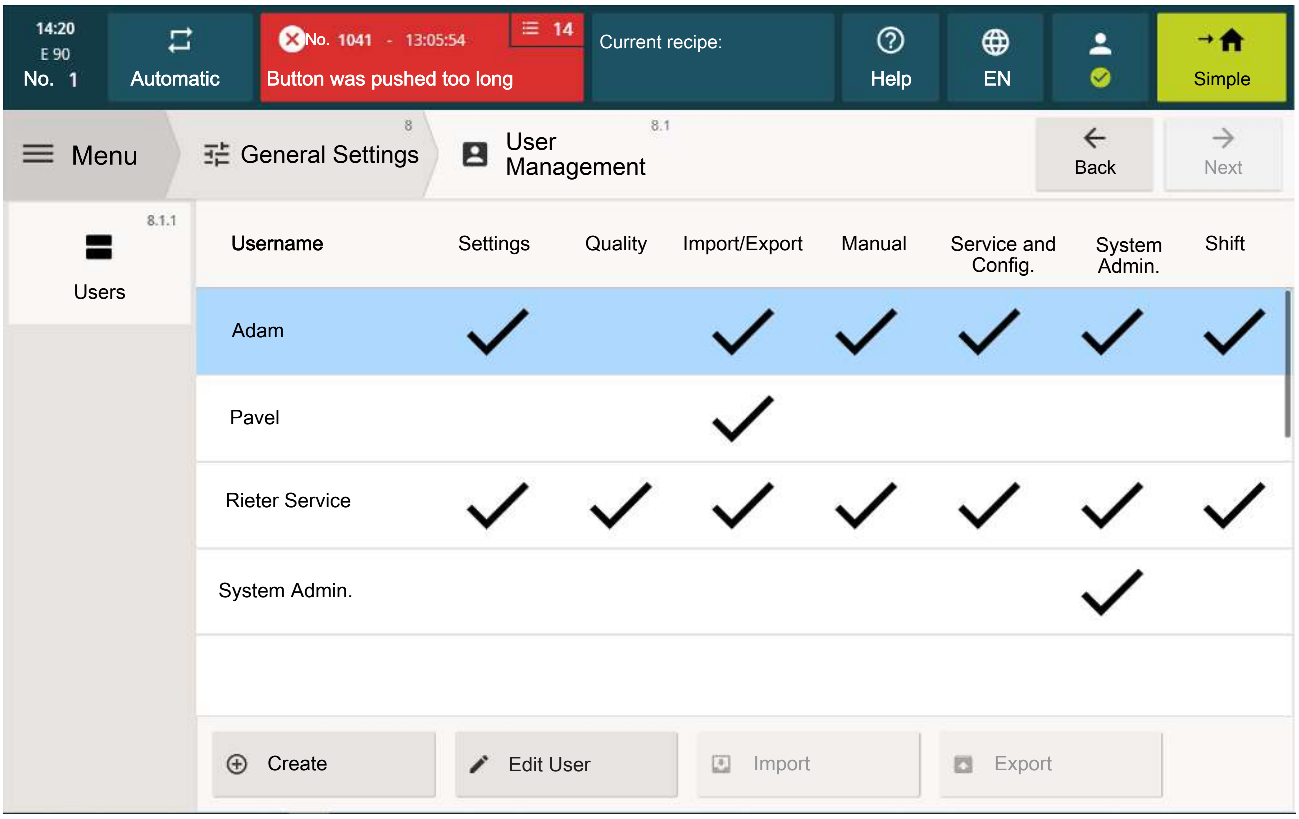

13:03
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
8
General Settings
Back
Next
8.1
User Management
8.2
Shift
8.3
Network
8.6
Time and Date
8.7
Simple-Mode Settings

Figure 311: Data screen 8 General settings

7.3.10.1 Data Screen 8.1.1 Users


14:20
E 90
No. 1
Automatic
14
Help
EN
Simple
Menu
8
General Settings
8.1
User Management
Back
Next
8.1.1
Users
Create
Edit User
Import
Export

No. 1041 - 13:05:54
Button was pushed too long

Current recipe:

Username	Settings	Quality	Import/Export	Manual	Service and Config.	System Admin.	Shift
Adam	✓		✓	✓	✓	✓	✓
Pavel			✓				
Rieter Service	✓	✓	✓	✓	✓	✓	✓
System Admin.						✓	

Figure 312: Data screen 8.1.1 Users

This data screen shows the list of the usernames and the user rights.

The parameters are only possible to be changed by the user who has the corresponding rights.

Create

The person with system administration rights can create a new user with this key.

Edit User

The person with system administration rights can edit the user information for the users.

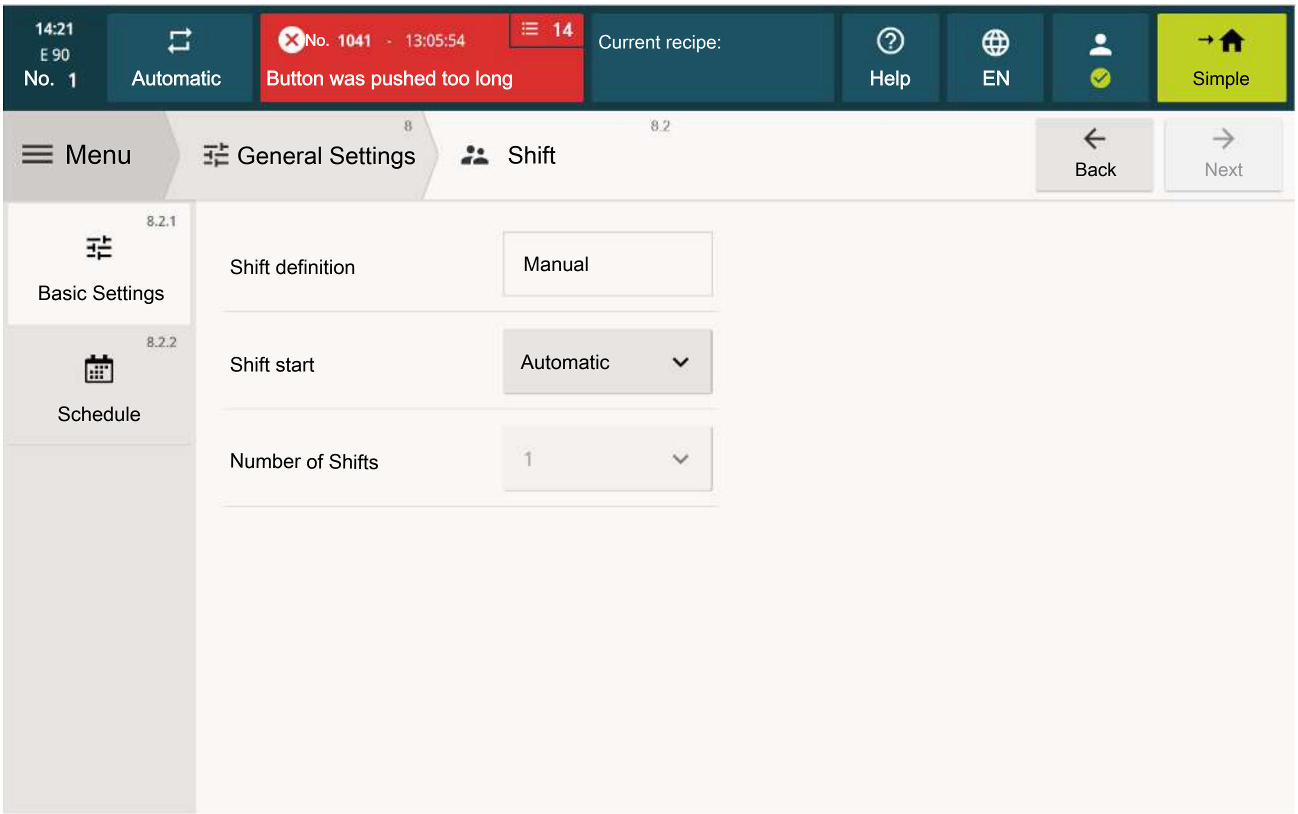
Import

This key is not used at the moment.

Export

This key is not used at the moment.

7.3.10.2 Data Screen 8.2.1 Basic Settings


14:21
E 90
No. 1
Automatic
No. 1041 - 13:05:54
14
Current recipe:
Help
EN
Simple
Menu
8
General Settings
8.2
Shift
Back
Next
8.2.1
Basic Settings
8.2.2
Schedule

Button was pushed too long

Shift definition: Manual

Shift start: Automatic

Number of Shifts: 1

Figure 313: Data screen 8.2.1 Basic settings

Shift definition

- If the option **Yes** is selected for the field **SPIDERweb connection** on the data screen 8.3, **SPIDERweb** shows in this field.
- If the option **No** is selected in the field **SPIDERweb connection** on the data screen 8.3, **Manual** is shown in this field.

Shift start

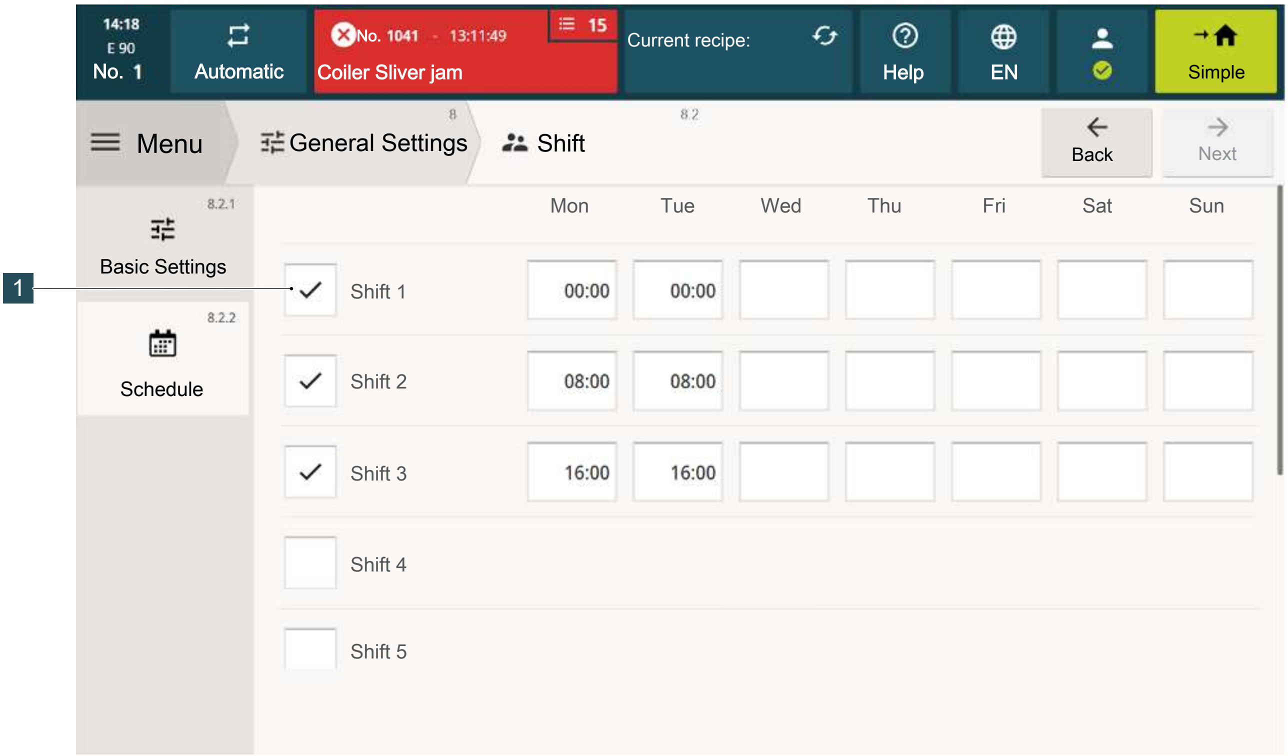
With this key, if the shift changes automatically or manually can be selected.

- **Automatic**: The shift on the data screen changes automatically in accordance with the time that is set on the data screen 8.2.2.
- **Manual**: The shift number must be selected with the key **Shift** on the data screen of simple mode in accordance with the current status. Then the shift-related data is shown correctly on the data screen.

Number of Shifts

If the option **Manual** is selected in the field **Shift start**, the number of shifts can be set in this field.

7.3.10.3 Data Screen 8.2.2 Schedule


14:18
E 90
No. 1
Automatic
No. 1041 - 13:11:49
15
Coiler Sliver jam
Current recipe:
Help
EN
Simple
Menu
8
General Settings
8.2
Shift
Back
Next
8.2.1
Basic Settings
8.2.2
Schedule
1

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
☑ Shift 1	00:00	00:00					
☑ Shift 2	08:00	08:00					
☑ Shift 3	16:00	16:00					
☐ Shift 4							
☐ Shift 5							

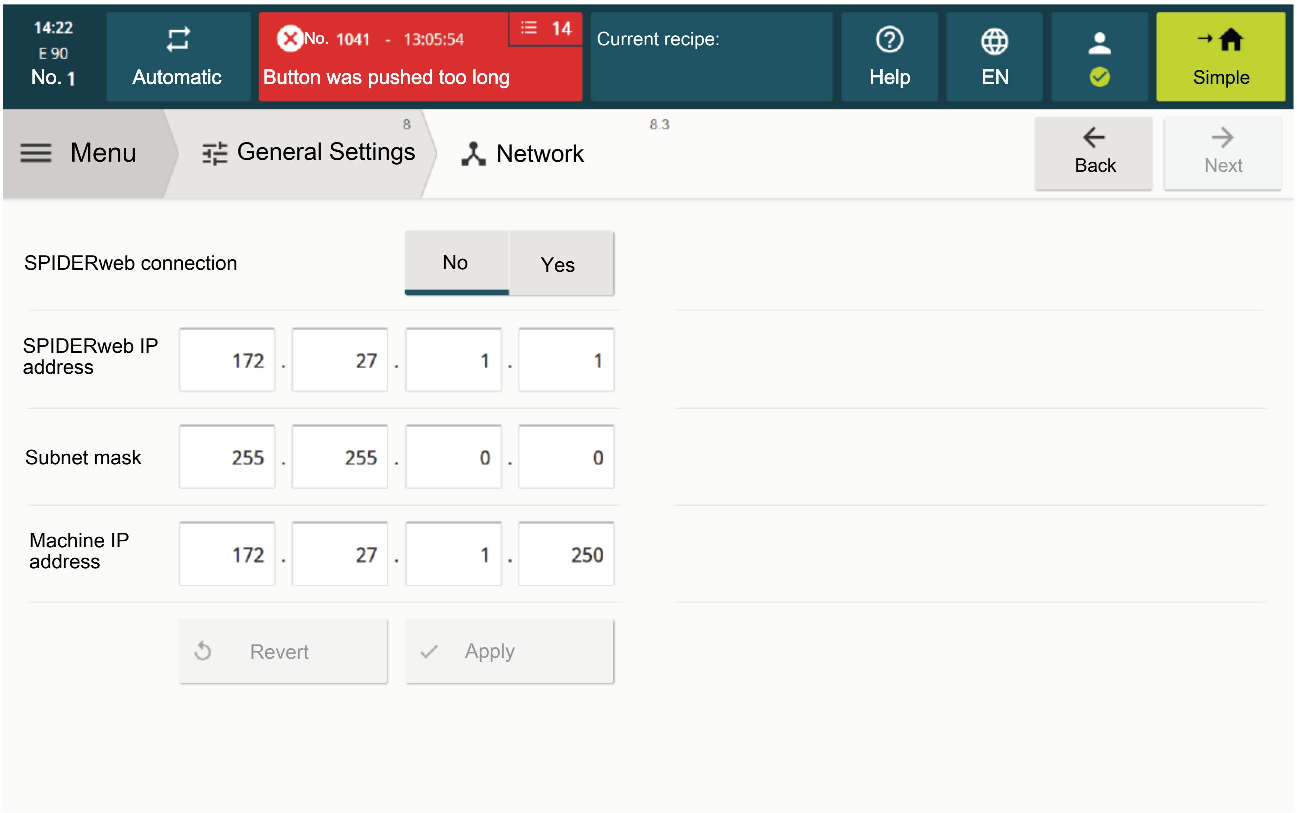
Figure 314: Data screen 8.2.2 Schedule

If the option **Automatic** is selected in the field **Shift start** in the data screen 8.2.1, this data screen 8.2.2 is available.

If the field 1 becomes tapped, the time input fields of each day are shown. The start time of the shift can be set in the fields.

If the start times of the shifts are set, the shift-related data changes automatically on the data screen.

7.3.10.4 Data Screen 8.3 Network


14:22
E 90
No. 1
Automatic
14
Current recipe:
Help
EN
Simple
Menu
8
General Settings
8.3
Network
Back
Next
Revert
Apply

No. 1041 - 13:05:54
Button was pushed too long

SPIDERweb connection: No | Yes

SPIDERweb IP address: 172 . 27 . 1 . 1

Subnet mask: 255 . 255 . 0 . 0

Machine IP address: 172 . 27 . 1 . 250

Figure 315: Data screen 8.3 Network

The settings for the SPIDERweb can be done on this data screen. SPIDERweb is a data-recording system for production and quality data of Rieter machines.

SPIDERweb connection

If the machine is connected to SPIDERweb, the connection can be set to on or off with these keys.

SPIDERweb IP address

The SPIDERweb IP address is to be entered in this field. This is usually 172.27.1.1.

Subnet mask

The subnet mask is to be entered in this field. This is usually 255.255.0.0.

Machine IP address

The machine IP address is to be entered in the field. Combers are usually in the range of 172.27.30.1 – 172.27.30.255.

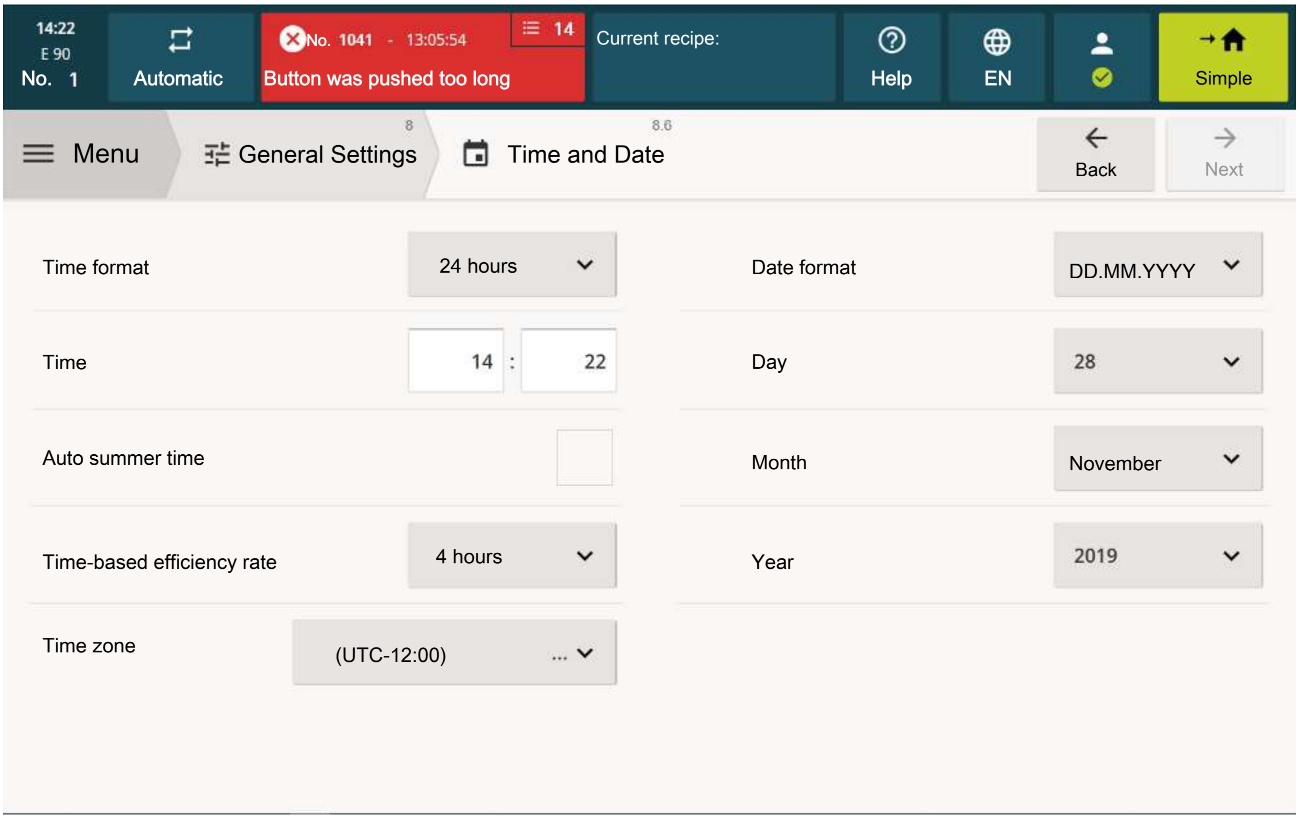
Revert

The settings on this page will be discarded with this key.

Apply

The entered number can be applied to the system with this key.

7.3.10.5 Data Screen 8.6 Time and Date


14:22
E 90
No. 1
Automatic
14
Current recipe:
Help
EN
Simple
Menu
8
General Settings
8.6
Time and Date
Back
Next

No. 1041 - 13:05:54
Button was pushed too long

Time format: 24 hours
Time: 14 : 22
Auto summer time: ☐
Time-based efficiency rate: 4 hours
Time zone: (UTC-12:00) ...
Date format: DD.MM.YYYY
Day: 28
Month: November
Year: 2019

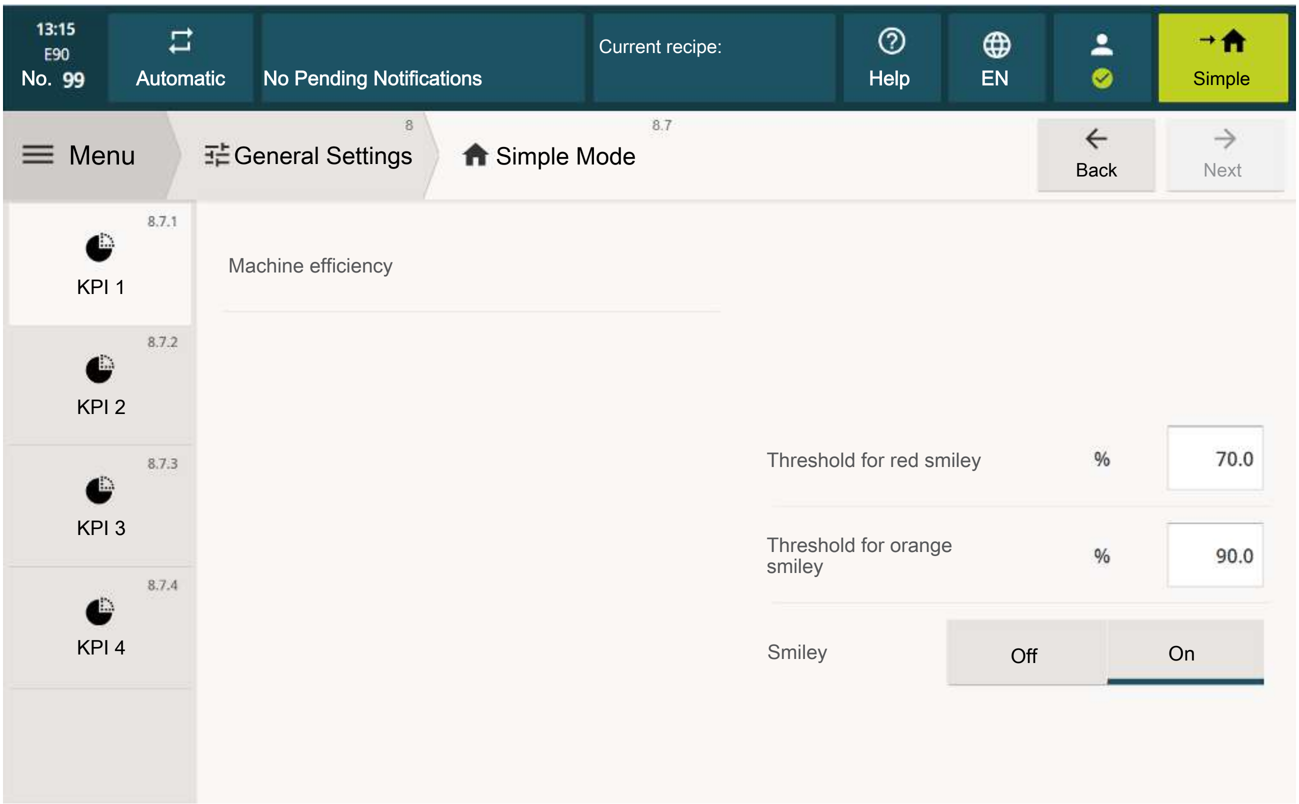
Figure 316: Data screen 8.6 Time and date

The time and date of the system can be set in this data screen.

Time-based efficiency rate

The average machine efficiency is to be calculated based on a specified time span. This time span can be set in this field. The average machine efficiency is shown on the data screen of simple mode.

7.3.10.6 Data Screen 8.7.1 KPI 1


13:15
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
8
General Settings
8.7
Simple Mode
Back
Next
8.7.1
KPI 1
8.7.2
KPI 2
8.7.3
KPI 3
8.7.4
KPI 4
Off
On

Machine efficiency

Threshold for red smiley % 70.0

Threshold for orange smiley % 90.0

Smiley Off On

Figure 317: Data screen 8.7.1 KPI 1

This data screen shows the KPI of machine efficiency.

On the data screen of simple mode, a smiley can show the KPI status. The related rules of the smiley can be set on this data screen.

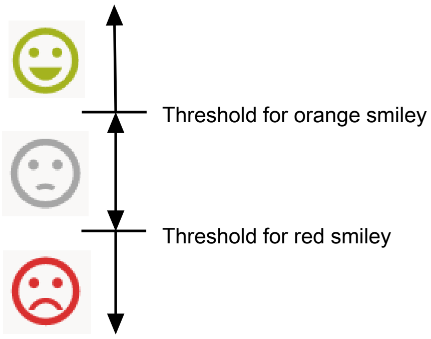

Threshold for orange smiley
Threshold for red smiley

Figure 318: Smiley in different situations

Threshold for red smiley

If the KPI value is smaller than the value that is set in this field, a red smiley is shown on the data screen of simple mode.

Threshold for orange smiley

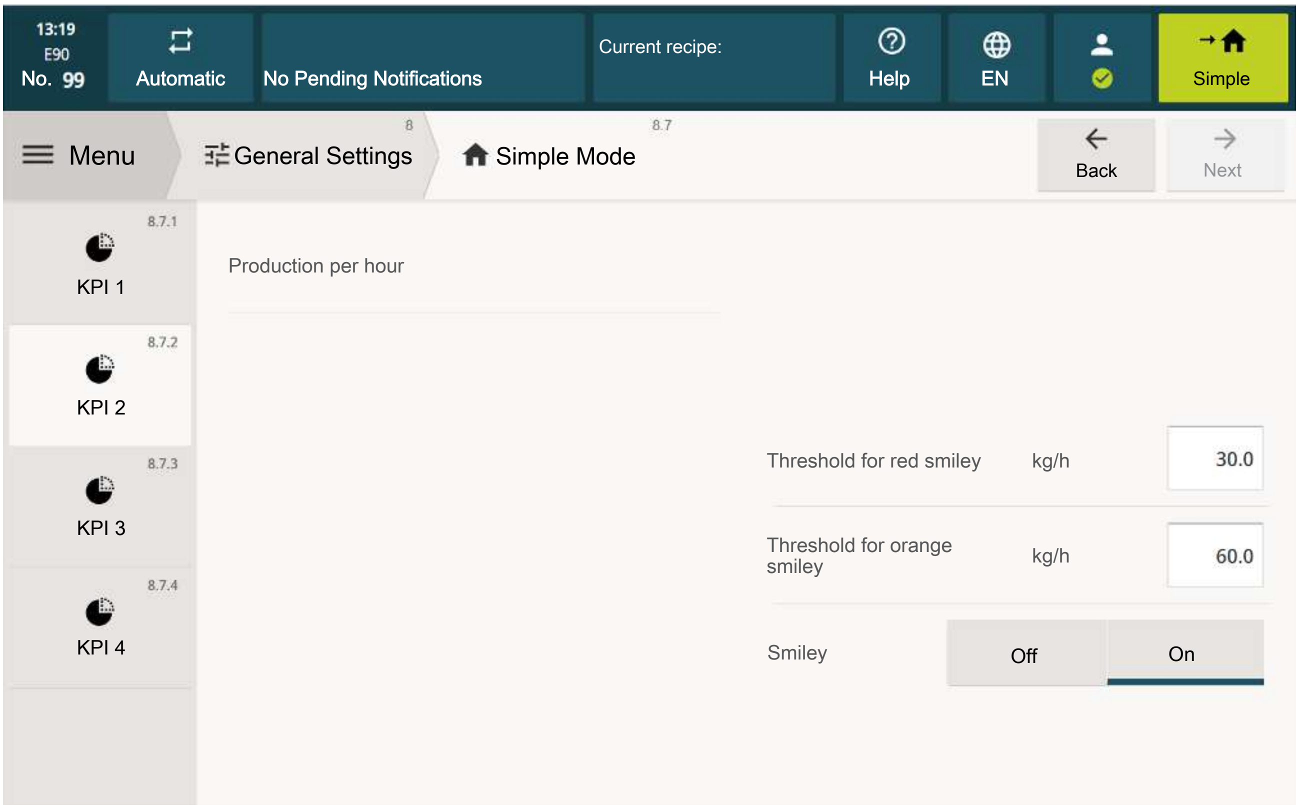
If the KPI value is bigger than the value that is set in this field, a green smiley is shown on the data screen of simple mode.

If the KPI value is between the 2 thresholds, an orange smiley is shown on the data screen of simple mode (actually is grey in panel).

Smiley

These key can be used to set if the smileys are shown or are not shown on the data screen of simple mode.

7.3.10.7 Data Screen 8.7.2 KPI 2


13:19
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
8
General Settings
8.7
Simple Mode
Back
Next
8.7.1
KPI 1
8.7.2
KPI 2
8.7.3
KPI 3
8.7.4
KPI 4

Production per hour

Threshold for red smiley kg/h 30.0

Threshold for orange smiley kg/h 60.0

Smiley Off [✓ On]

Figure 319: Data screen 8.7.2 KPI 2

This data screen shows the KPI of production per hour

On the data screen of simple mode, a smiley can show the KPI status. The related rules of the smiley can be set on this data screen.

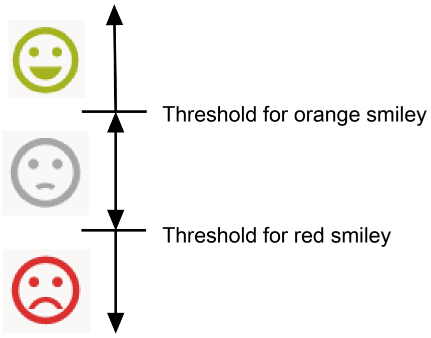


Figure 320: Smiley in different situations

Threshold for red smiley

If the KPI value is smaller than the value that is set in this field, a red smiley is shown on the data screen of simple mode.

Threshold for orange smiley

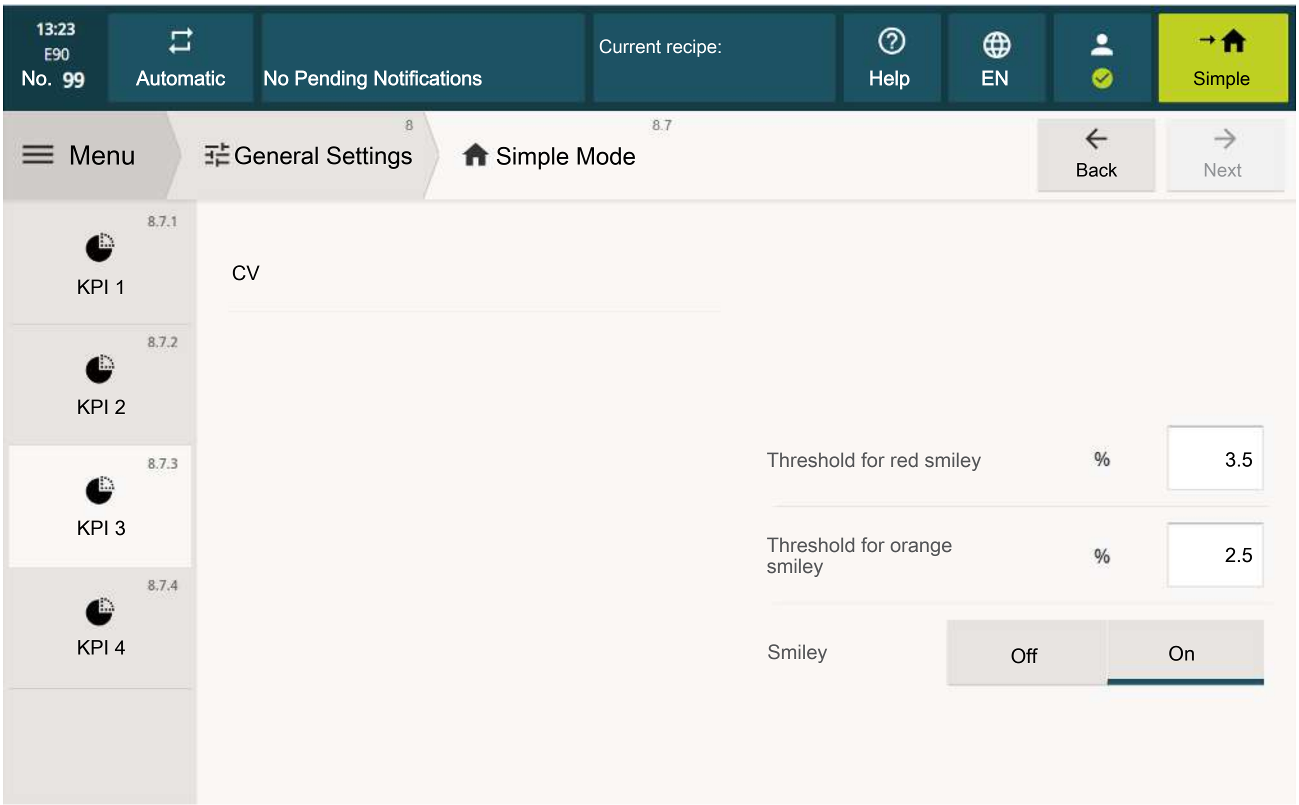
If the KPI value is bigger than the value that is set in this field, a green smiley is shown on the data screen of simple mode.

If the KPI value is between the 2 thresholds, an orange smiley is shown on the data screen of simple mode (actually is grey in panel).

Smiley

These key can be used to set if the smileys are shown or are not shown on the data screen of simple mode.

7.3.10.8 Data Screen 8.7.3 KPI 3


13:23
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
8
General Settings
8.7
Simple Mode
Back
Next
8.7.1
KPI 1
8.7.2
KPI 2
8.7.3
KPI 3
8.7.4
KPI 4
Off
On

CV

Threshold for red smiley % 3.5

Threshold for orange smiley % 2.5

Smiley: On

Figure 321: Data screen 8.7.3 KPI 3

This data screen shows the KPI of CV value.

On the data screen of simple mode, a smiley can show the KPI status. The related rules of the smiley can be set on this data screen.

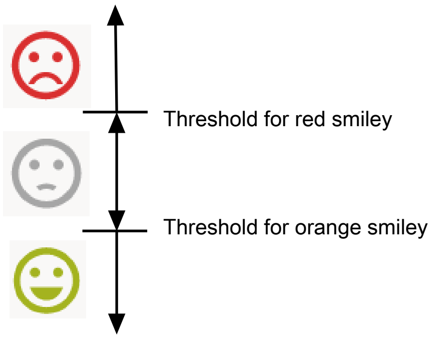

Threshold for red smiley
Threshold for orange smiley

Figure 322: Smiley in different situations

Threshold for red smiley

If the KPI value is bigger than the value that is set in this field, a red smiley is shown on the data screen of simple mode.

Threshold for orange smiley

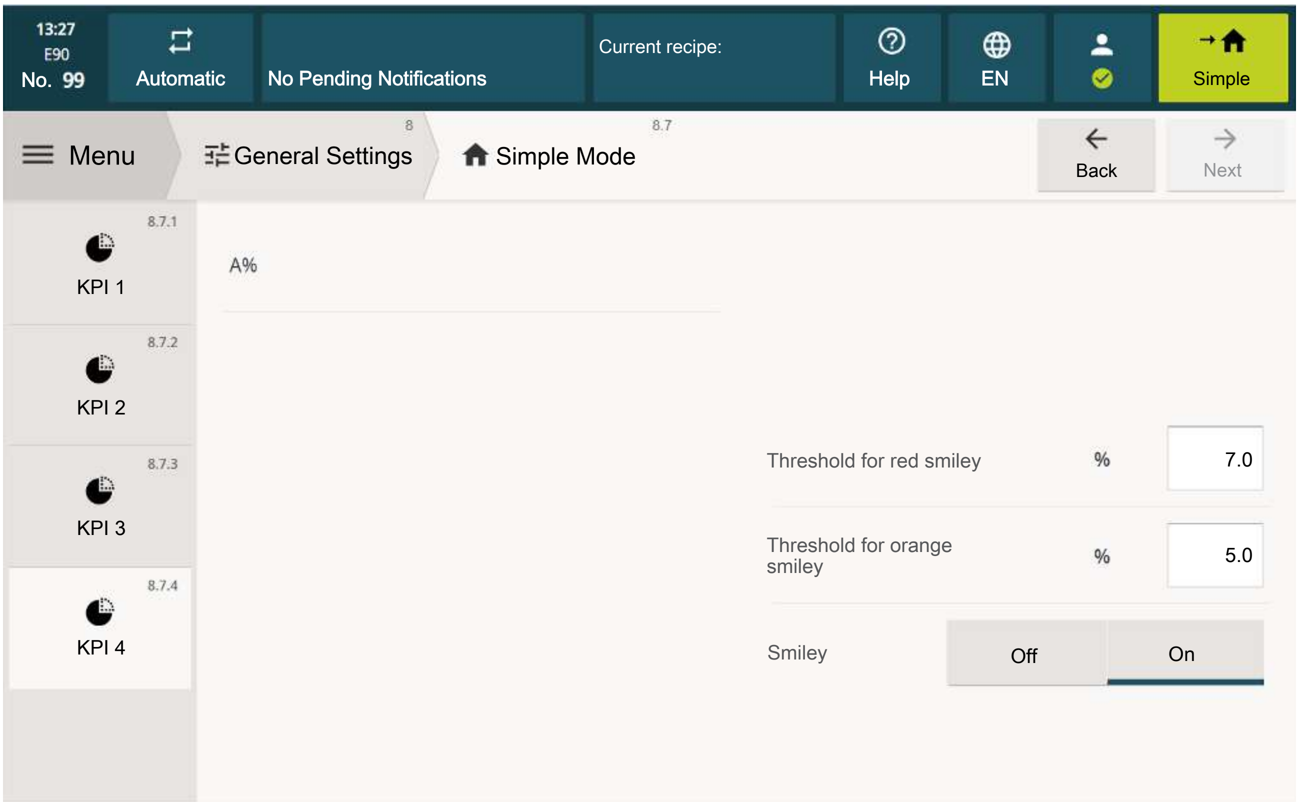
If the KPI value is smaller than the value that is set in this field, a green smiley is shown on the data screen of simple mode.

If the KPI value is between the 2 thresholds, an orange smiley is shown on the data screen of simple mode (actually is grey in panel).

Smiley

These key can be used to set if the smileys are shown or are not shown on the data screen of simple mode.

7.3.10.9 Data Screen 8.7.4 KPI 4


13:27
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
8
General Settings
8.7
Simple Mode
Back
Next
8.7.1
KPI 1
8.7.2
KPI 2
8.7.3
KPI 3
8.7.4
KPI 4

A%

Threshold for red smiley % 7.0

Threshold for orange smiley % 5.0

Smiley Off [✓ On]

Figure 323: Data screen 8.7.4 KPI 4

This data screen shows the KPI of A% value.

On the data screen of simple mode, a smiley can show the KPI status. The related rules of the smiley can be set on this data screen.

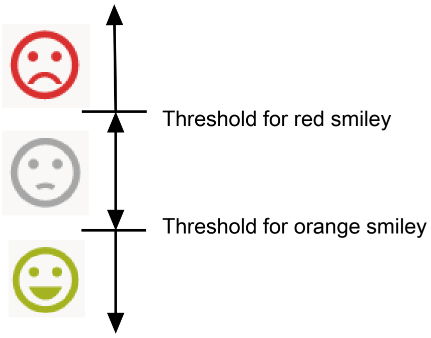


Figure 324: Smiley in different situations (A% is positive number)

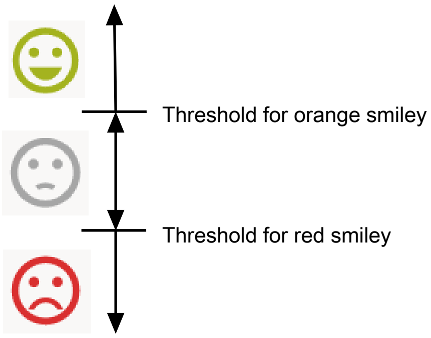


Figure 325: Smiley in different situations (A% is negative number)

Threshold for red smiley

A% is positive number If the KPI value is bigger than the value that is set in this field, a red smiley is shown on the data screen of simple mode.

A% is negative number If the KPI value is smaller than the value that is set in this field, a red smiley is shown on the data screen of simple mode.

Threshold for orange smiley

A% is positive number If the KPI value is smaller than the value that is set in this field, a green smiley is shown on the data screen of simple mode.

A% is negative number If the KPI value is bigger than the value that is set in this field, a green smiley is shown on the data screen of simple mode.

If the KPI value is between the 2 thresholds, an orange smiley is shown on the data screen of simple mode (actually is grey in panel).

Smiley

These key can be used to set if the smileys are shown or are not shown on the data screen of simple mode.

7.3.11 Data Screen 9 Info and Logs

This section contains the information about the logs.

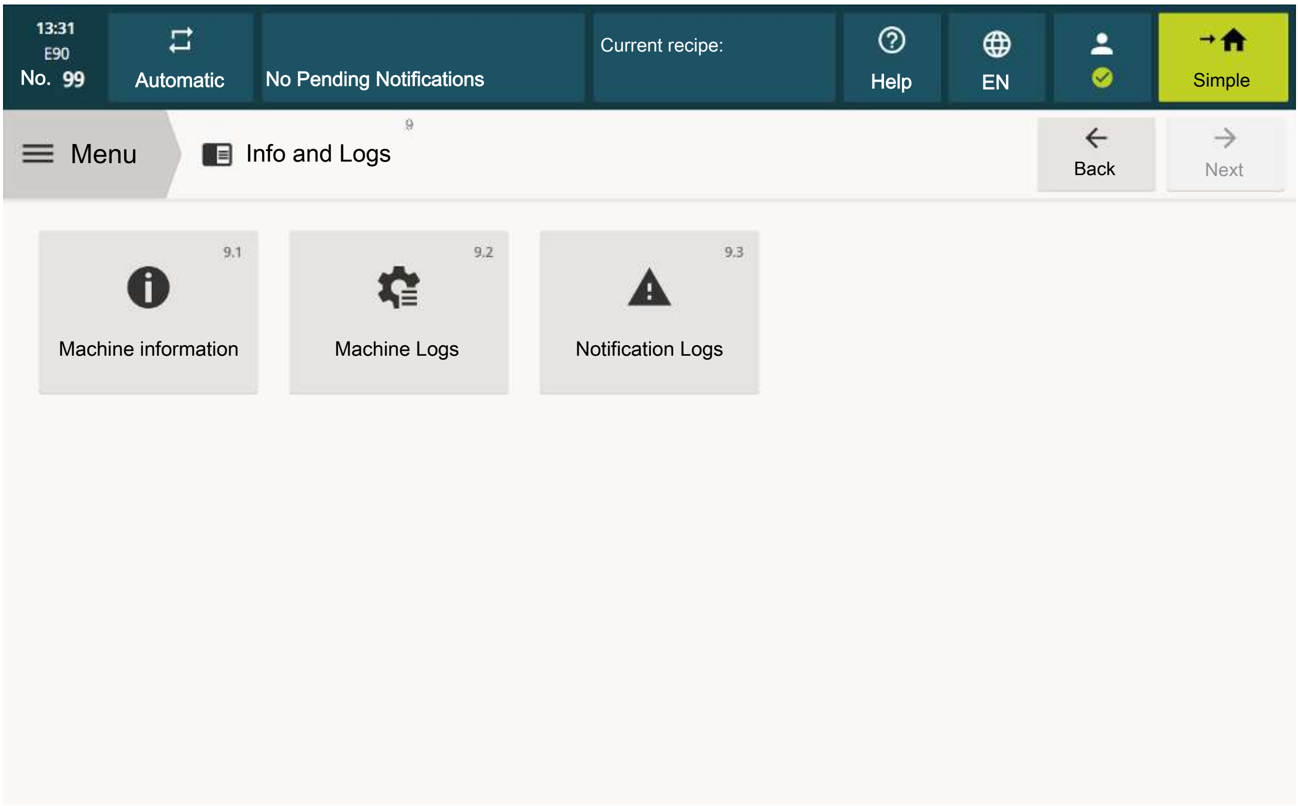
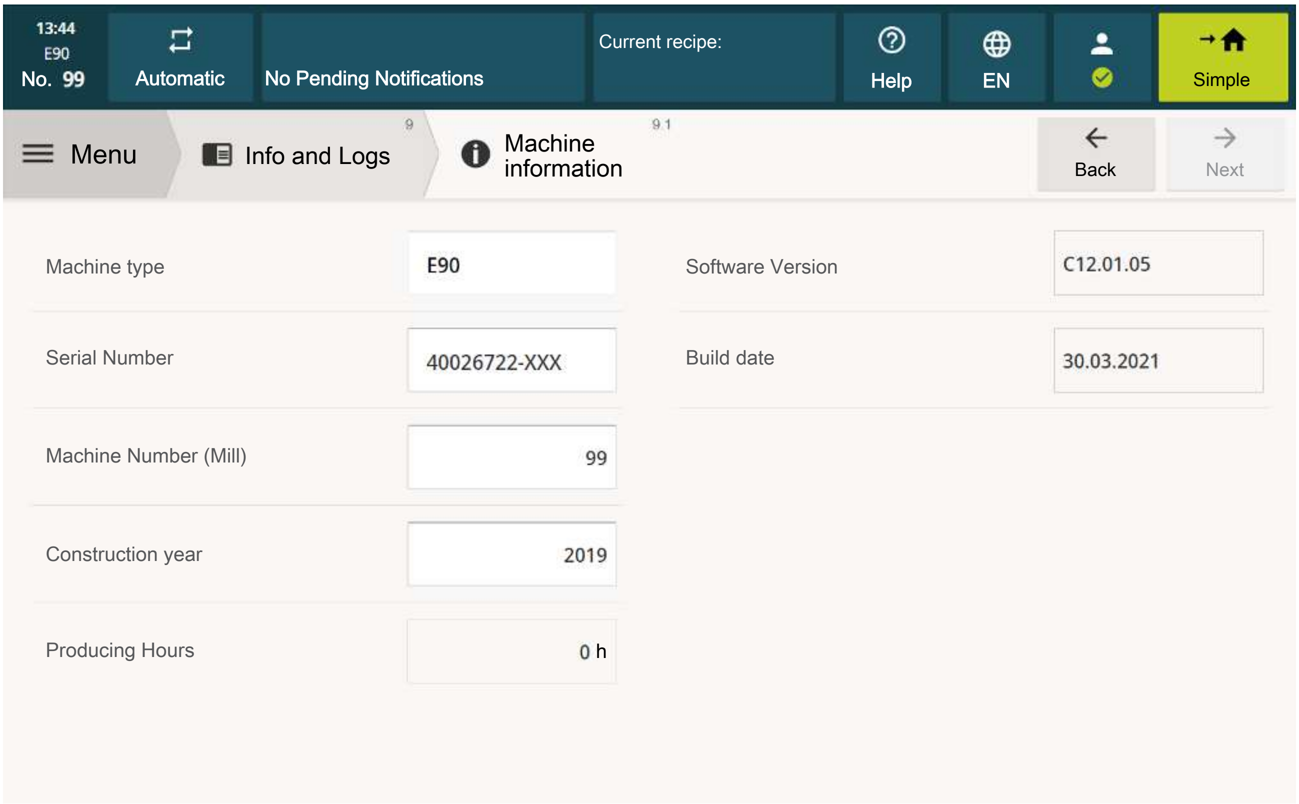

13:31
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Info and Logs
9
Back
Next
9.1
Machine information
9.2
Machine Logs
9.3
Notification Logs

Figure 326: Data screen 9 Info and Logs

7.3.11.1 Data Screen 9.1 Machine Information


13:44
E90
No. 99
Automatic
No Pending Notifications
Current recipe:
Help
EN
Simple
Menu
Info and Logs
9
9.1
Machine information
Back
Next

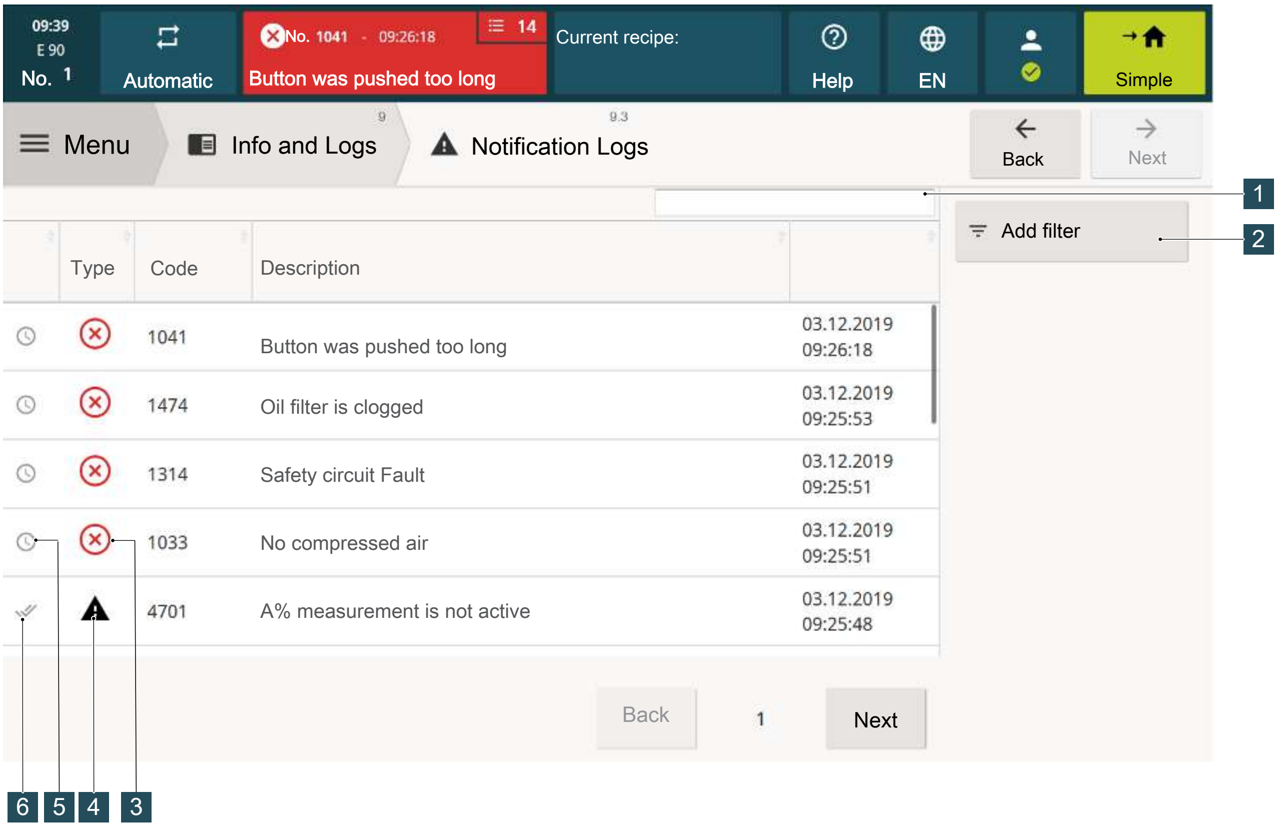
Machine type	E90
Serial Number	40026722-XXX
Machine Number (Mill)	99
Construction year	2019
Producing Hours	0 h
Software Version	C12.01.05
Build date	30.03.2021

Figure 327: Data screen 9.1 Machine information

This data screen shows the machine information.

Only the number in the field **Machine Number (Mill)** can be set. The serial number and the construction year must be set according to the data on the identification plate of the machine.

7.3.11.2 Data Screen 9.3 Notification Logs


09:39
E 90
No. 1
Automatic
No. 1041 - 09:26:18
14
Button was pushed too long
Current recipe:
Help
EN
Simple
Menu
9
Info and Logs
9.3
Notification Logs
Back
Next
Add filter
Back
1
Next
1
2
6
5
4
3

	Type	Code	Description	
		1041	Button was pushed too long	03.12.2019 09:26:18
		1474	Oil filter is clogged	03.12.2019 09:25:53
		1314	Safety circuit Fault	03.12.2019 09:25:51
		1033	No compressed air	03.12.2019 09:25:51
		4701	A% measurement is not active	03.12.2019 09:25:48

Figure 328: Data screen 9.3 Notification Logs

This data screen shows the history notifications.

The search of this information can be done with the method that follow:

- With keywords: in the field 1, the search of the notification can be done with the keywords in the column Type, Log Time, and Description.
- With the key **Add filter** 2: if the key **Add filter** 2 becomes tapped, a window comes into view. The search criteria are given in this window and the search can be done.

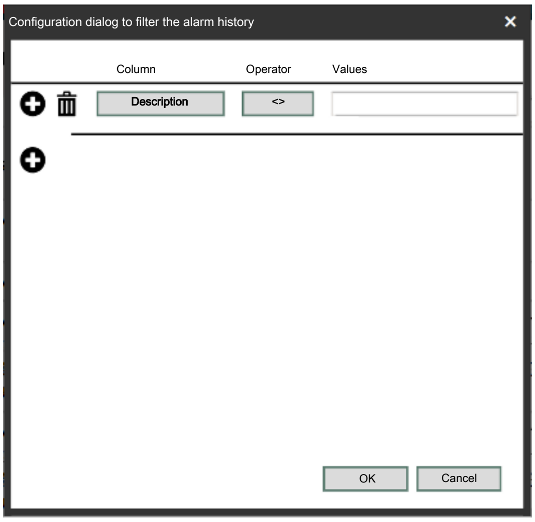

Configuration dialog to filter the alarm history
Column
Operator
Values
Description
<>
OK
Cancel

Figure 329: Search window

Notification status

There are 3 statuses for notifications:

- With a clock symbol 5: The remedy of the fault or the warning is done but the acknowledgement is not done in the data screen 4.
- With 2 check marks 6: The remedy of the fault or the warning is done and the acknowledgement is done in the data screen 4.
- Without a symbol: The remedy of the fault or the warning is not done.

Type

There are 2 types of notifications:

- Waning 4: The machine does not stop when a warning message is shown on the machine.
- Fault 3: The machine stops if a fault occurs on the machine.

Code

This field shows the fault code.

Description

This field shows the cause of the fault or the warning.

Date and Time

This field shows when the fault or the warning occurs.

7.3.12 Data Screen 12 Operation Manual

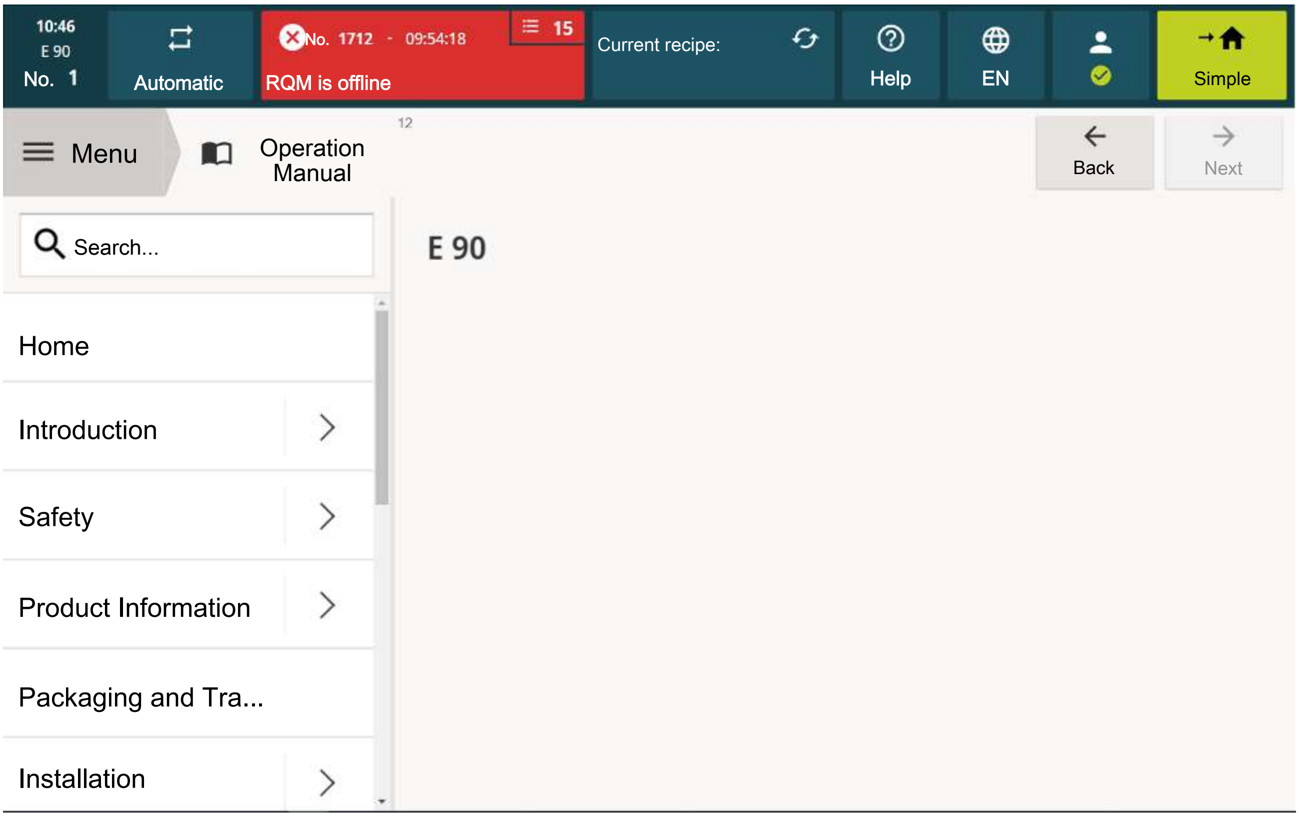

10:46
E 90
No. 1
Automatic
No. 1712 - 09:54:18
15
RQM is offline
Current recipe:
Help
EN
Simple
Menu
Operation Manual
12
Back
Next
Search...
E 90
Home
Introduction
Safety
Product Information
Packaging and Tra...
Installation

Figure 330: Data screen 12 Operation Manual

The operation manual is shown on this data screen. The related content can be found with the methods that follow:

- Do a search with the key words in the search field
- Tap the subtitles in the catalog on the left side.

7.4 Gearing Layout

This section contains the gearing layout information.

Gearing layout of the Longitudinal Section

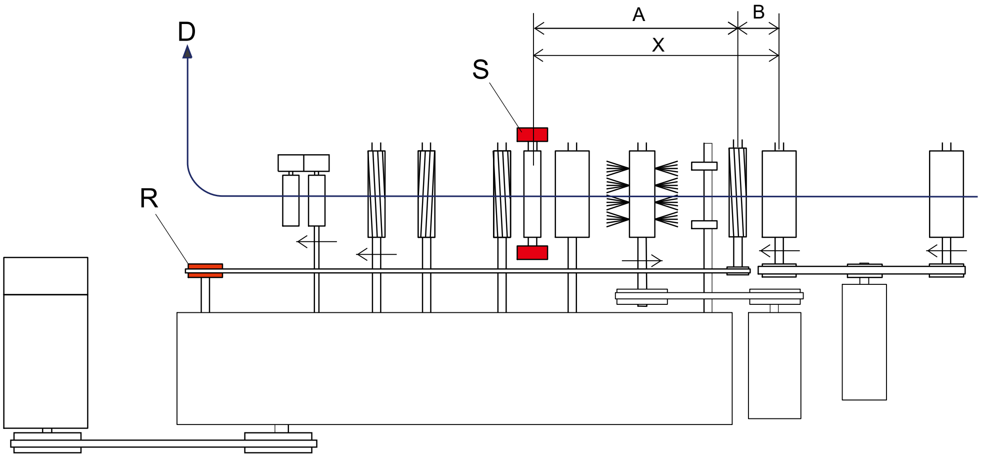


Figure 331: Gearing layout (with ROBOlap)

D	Drafting system	S	Ratchet wheel
R	Change gear for lap rollers		

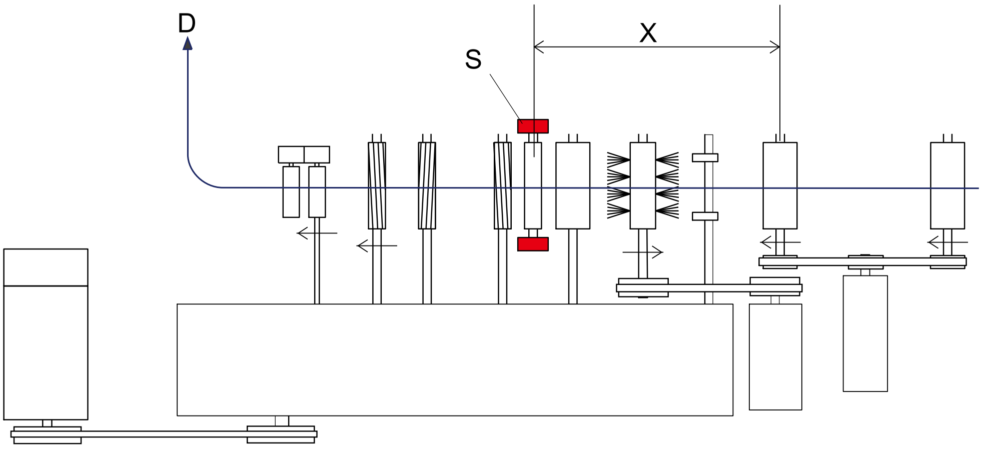


Figure 332: Gearing layout (without ROBOlap)

D	Drafting system	S	Ratchet wheel

Gearing layout of the Delivery Unit

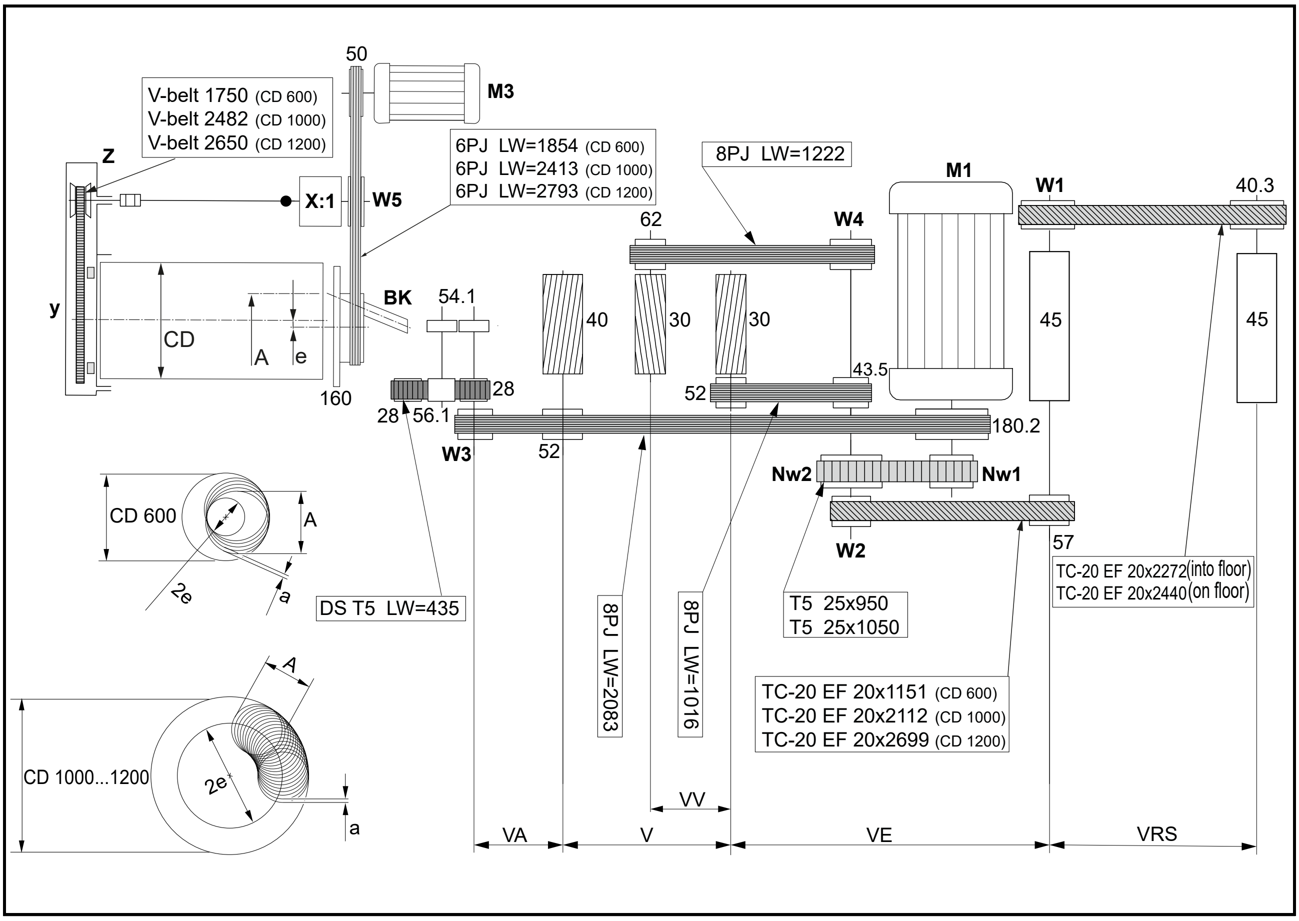

50
M3
V-belt 1750 (CD 600)
V-belt 2482 (CD 1000)
V-belt 2650 (CD 1200)
Z
X:1
W5
6PJ LW=1854 (CD 600)
6PJ LW=2413 (CD 1000)
6PJ LW=2793 (CD 1200)
8PJ LW=1222
62
W4
M1
W1
40.3
y
CD
A
e
BK
54.1
40
30
30
45
45
160
28
28
56.1
52
43.5
180.2
W3
52
Nw2
Nw1
W2
57
CD 600
A
2e
a
DS T5 LW=435
8PJ LW=2083
8PJ LW=1016
T5 25x950
T5 25x1050
TC-20 EF 20x2272(into floor)
TC-20 EF 20x2440(on floor)
TC-20 EF 20x1151 (CD 600)
TC-20 EF 20x2112 (CD 1000)
TC-20 EF 20x2699 (CD 1200)
A
CD 1000...1200
2e
a
VV
VA
V
VE
VRS

Figure 333: Gearing layout of the delivery unit

W1	39.9	39.5	39.1
VRS	1.01	1.02	1.03

W2	30.6	30.3	29.9
VE	1.01	1.02	1.03

W3	69.6	68.9	68.3
VA	1.01	1.02	1.03

W4	59.8	62.4	65.0	67.6	70.2	72.8	78.0	83.2	88.4
VV	1.15	1.20	1.25	1.30	1.35	1.40	1.50	1.60	1.70

W5	80	98	110
a	26	22	19

$$VA = \frac{70.3}{W3}$$

$$VV = \frac{W4}{52}$$

	Nw1
Nw2	24
	V
113	26.0
109	25.1
105	24.2
103	23.7
101	23.2
97	22.3
93	21.4

	Nw1
Nw2	29
	V
113	21.5
109	20.8
105	20.0
103	19.6
101	19.2
97	18.5
93	17.7

	Nw1
Nw2	34
	V
113	18.4
109	17.7
105	17.1
103	16.7
101	16.4
97	15.8
93	15.1

	Nw1
Nw2	40
	V
113	15.6
109	15.1
105	14.5
103	14.2
101	13.9
97	13.4
93	12.8

	Nw1
Nw2	47
	V
113	13.3
109	12.8
105	12.3
103	12.1
101	11.9
97	11.4
93	10.9

CD	**600**	**1000**	**1200**
BK	29	29	29
A	380	300	380
e	105	345	405
X	15	25	25
Z	125	100	85
y	400	600	600

7.5 Notice on the Machine Gearbox

The machine gearbox 1 is in the head stock.

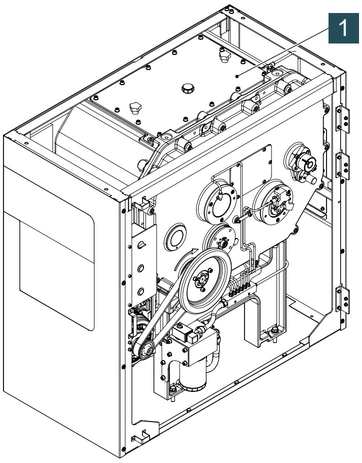


Figure 334: Cover of the gearbox

Only Rieter personnel or Rieter-approved personnel are permitted to adjust or change the settings in the gearbox. If 1 seal of the seals **2** at the gearbox is defective, Rieter does not accept any liability for damage to the gear unit.

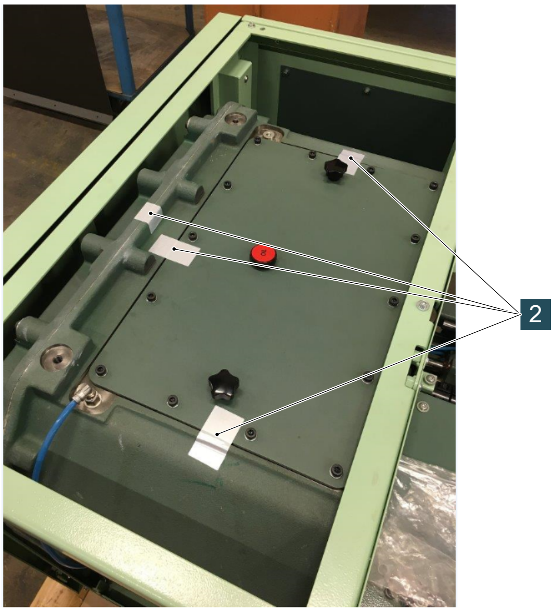


Figure 335: Seals at the gearbox

NOTICE

Modification or setting in the gear box!

Damage to the gear unit

- Do not modify anything or change settings in the gear box.

7.6 Starting the Machine

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is prepared for the production.
- ✓ The main compressed-air valve is open.

1. Set the main switch to the position ON.

   ⇨ The power supply to the machine is started.

2. Put the raw material into the machine.
3. To examine the correct raw material flow, start the machine with the jog button in the low speed.
4. Push the start button.

Result The machine is started.

7.7 Setting the Machine for Production

The chapter contains the information about how to adjust the machine before the machine starts.

The tool and gauge list is in the chapter **Appendix** (*refer to ▸ 646*).

7.7.1 Setting the Machine to an Index

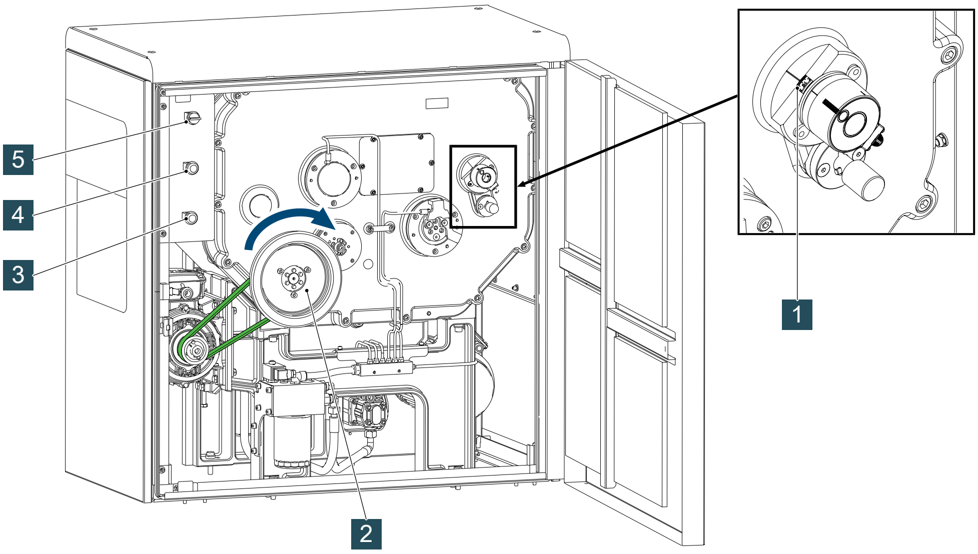
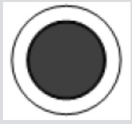


Figure 336: Machine index setting

	By-pass safety circuit switch	To operate the machine at a low speed, the 2 buttons are to be operated at the same time with 2 hands. Turn and hold the by-pass safety circuit switch and at the same time, push and hold the jog button.

	Jog button	

WARNING

Running belt exposed when the head stock door is open

Risk of injury by the running belt when the machine is operated with the jog button in the head stock.

▶ Stay away from the opened area of the head stock when the machine is in jog mode。

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Open the head stock door.
2. Turn and hold the by-pass safety circuit switch 5 and at the same time push the jog button 3.

   ⇨ The machine runs at low speed.
3. Monitor the index at the scale 1 or at the data screen of simple mode or at the data screen 7.3.1 **Index 24**.
4. Release the jog button 3 when the index is near the necessary value.

   ⇨ The machine index is set approximately.
5. Release the by-pass safety circuit switch 5.
6. To release the brake of the motor, push the brake release button 4.
7. Turn the main drive pulley 2 clockwise until the index is at the necessary value.

Result The machine is set to an index.

7.7.2 Piecing the Batt Automatically (with ROBOlap)

For the machine with ROBOlap, the piecing of batt is done automatically.

Prerequisites Make sure that the criteria are obeyed:

✓ The full laps are on the SERVOtrolley or on the lap carriers.

1. Check the detaching position of the batt fringe 1.

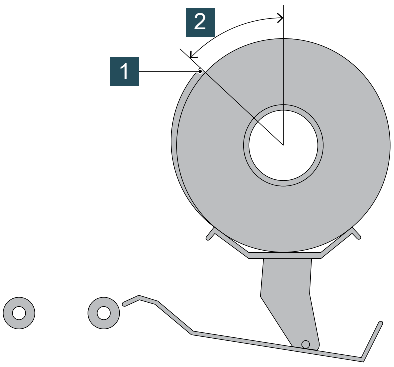


Figure 337: Detaching position of the lap

- ⇨ If the angle 2 is 45°, the lap is in a good condition.
- ⇨ If the angle 2 is more than 50°, increase the lap positioning distance at the OMEGAlap.
- ⇨ If the angle 2 is less than 40°, decrease the lap positioning distance at the OMEGAlap.

2. To start the lap change and the batt piecing procedure, push the start button.

Result The lap change procedure and the batt piecing start automatically.

7.7.3 Piecing the Batt Manually (without ROBOlap)

For the machines without ROBOlap, the piecing of batt is done manually.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ The laps at the machine are empty.

1. Push down the tube.
2. Turn the tube in the direction of the arrow.

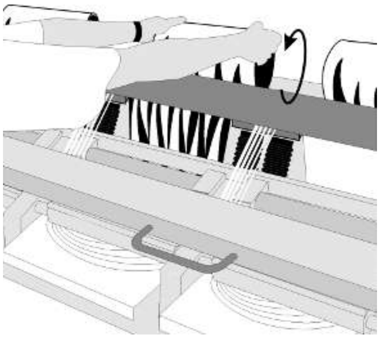


Figure 338: Removal of tube

- ⇨ The detaching of the batt is done.

3. Remove the tubes.

Ejecting the Tubes

1. Make sure that the lap trolley is ready in position.
2. Make sure that the tubes are empty.
3. To eject the tubes, push the tube ejecting button on the left side of the machine.
4. Push the eject tube button on the right-hand side of the machine.

   ⇨ The tubes are moved to the lap trolley or to the tube carriers.

Putting Full Laps to the Machine

1. Check if the full laps are in the correct operating position.
2. Make sure that the hoods of the combing units are closed.
3. To put the full laps to the operating position of the machine, push the lap feeding button.

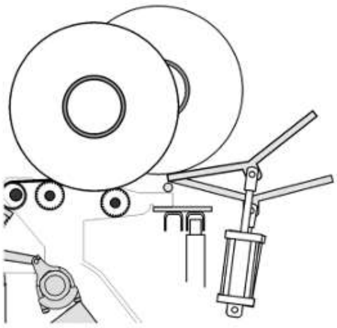


Figure 339: Lap feeding procedure

   ⇨ The full laps are moved onto the lap rollers.

4. Put the batt fringe on the hood.

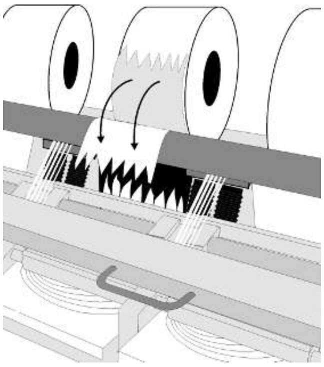


Figure 340: Batt on the hood

5. Open the hoods of the combing units.

   ⇨ The batt fringe falls onto the lap feed guide.

6. Make the batt smooth.

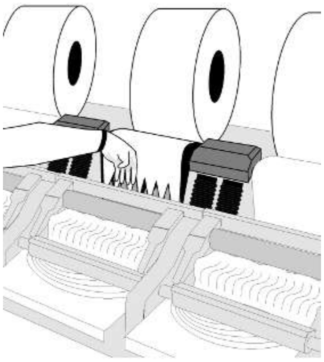


Figure 341: Adjustment of the batt to the nipper

⇨ The 2 fringes are connected and prepared to be pulled in by the feed roller.

Result The batts are pieced manually.

7.7.4 Changing the Lap Trolleys (for SERVOtrolley)

The lap trolleys are to be changed after a lap change during the production.

1. Turn up the locking device 1.

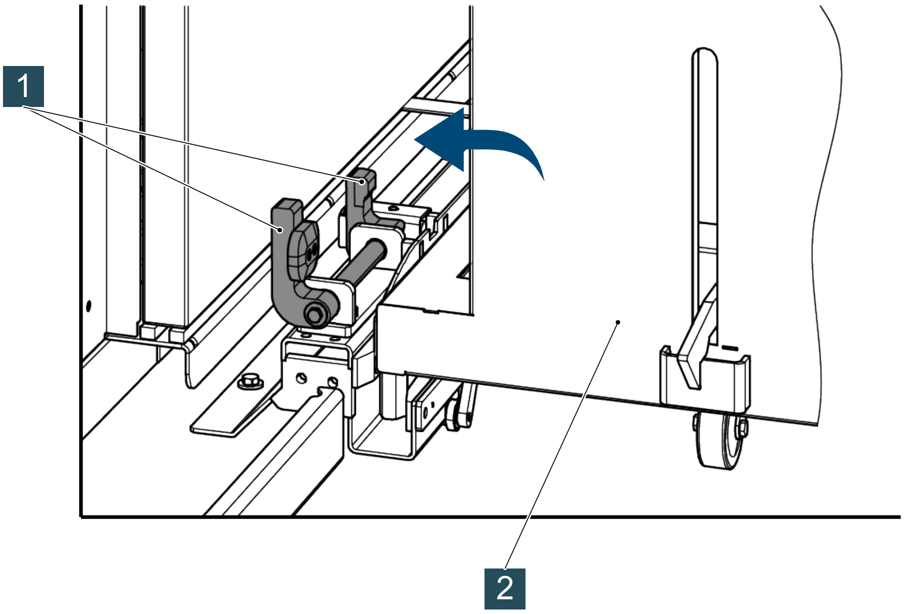


Figure 342: Lap trolley and locking device

2. Remove the 2 empty lap trolleys 2.
3. Push the 2 lap trolleys 3 with new laps into the comber.

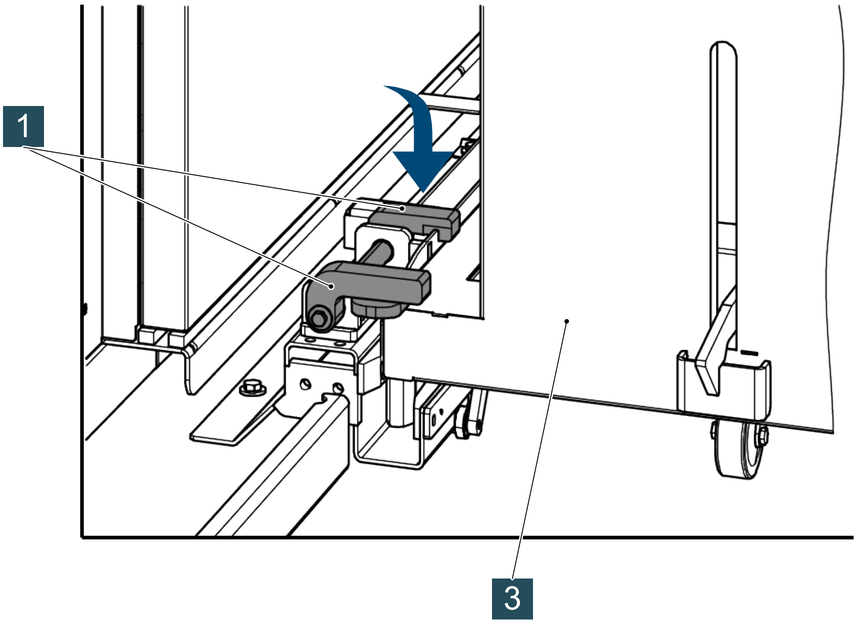


Figure 343: Lap trolley with new lap

4. Turn down the locking device 1.

   ⇨ The lap trolleys are locked in position.

Result The lap trolleys are changed.

7.7.5 Pulling the Batt into the Combing Head

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Open the top detaching roller (*refer to* ▸ *296*).
2. Remove the top comb (*refer to* ▸ *565*).
3. Remove the lid of the lap feed (ROBOlap) (*refer to* ▸ *633*).
4. Open the nipper (*refer to* ▸ *296*).
5. Remove the feed cylinder (*refer to* ▸ *580*).
6. Pull the batt into the nipper (*refer to* ▸ *298*).
7. Install the feed cylinder (*refer to* ▸ *581*).
8. Install the lid of the lap feed (ROBOlap) (*refer to* ▸ *633*).
9. Install the top comb (*refer to* ▸ *566*).
10. Close the holder of top detaching rollers (*refer to* ▸ *299*).

Result The batt is pulled into the combing head.

7.7.5.1 Opening the Top Detaching Rollers

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. To release the pressure from the holder, push the stop button.
2. Open the latch 1 on the 2 sides of the holder at the same time.

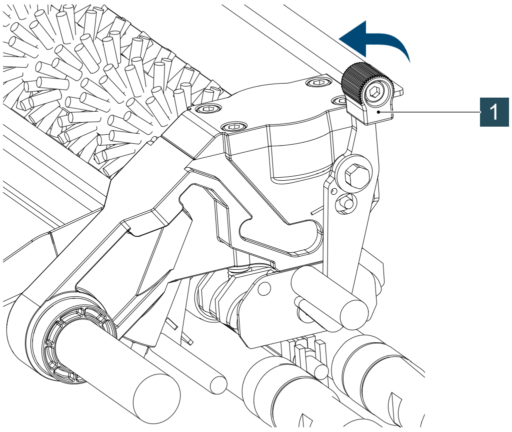


Figure 344: Latch of the holder

⇨ The holder is unlocked.

3. Tilt the holder 2 in the direction of the arrow.

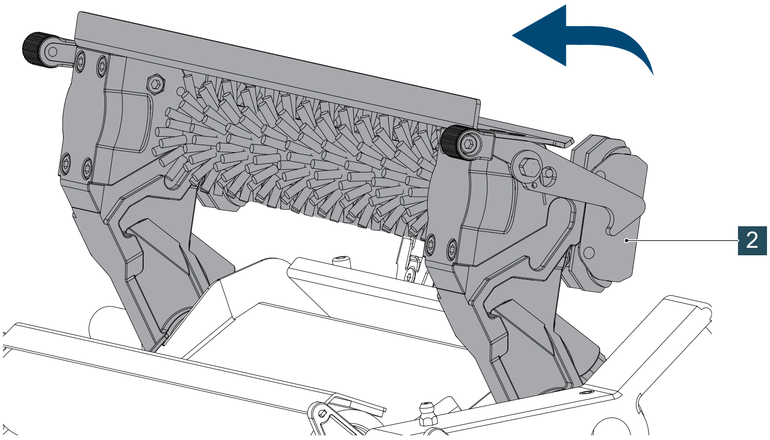


Figure 345: Holder

⇨ The holder is opened.

Result The top detaching roller are open.

7.7.5.2 Opening the Nipper

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

✓ The machine is set to index 24.

- ✓ All top combs are removed.
- ✓ The nipper lever is to be used.

1. Install the nipper lever **1** onto the batt guide **2**.

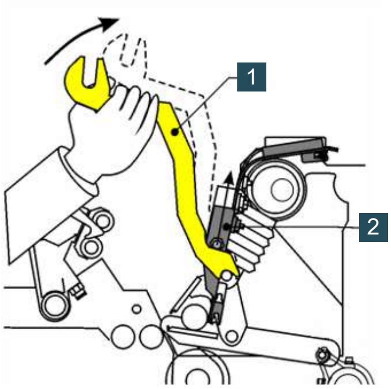


Figure 346: Nipper lever at the batt guide

2. Lift the nipper lever **1**.
   ⇨ The batt guide **2** is disengaged at the bottom.
3. Remove the batt guide **2** in the direction of the arrow carefully.

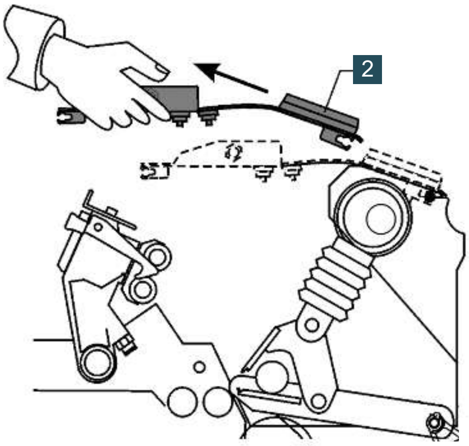


Figure 347: Removal of the batt guide

4. Hold the nipper **3** with the nipper lever **1** on both notches.

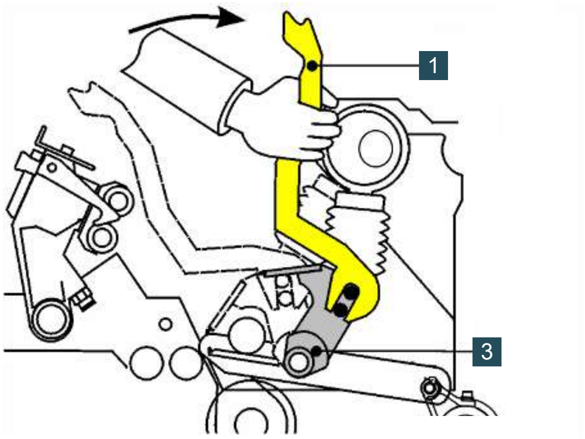


Figure 348: Opening of the nipper

5. Push up and open the top nipper.
   ⇨ The nipper is opened and the access to the feed cylinder is open.
6. Remove the nipper lever 1.

Result The nipper is open.

7.7.5.3 Pulling the Batt into the Nipper

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ The feed cylinder is removed (*refer to* ▸ *580*).

1. Pull the batt through below the wiper 1.

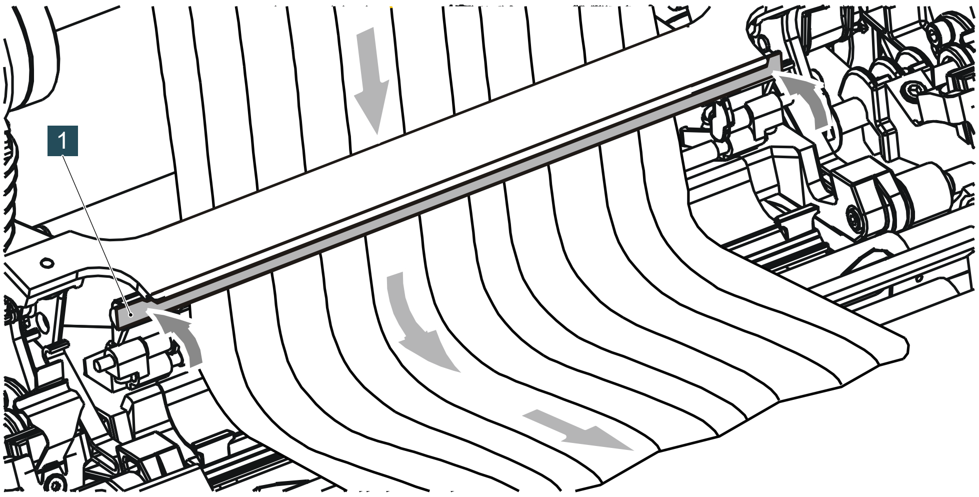


Figure 349: Stripper

Result The batt is pulled into the nipper.

7.7.5.4 Closing the Holder of Top Detaching Rollers

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Install the top detaching rollers.
2. Check the fit of the bearing 2 and the press saddle 1.

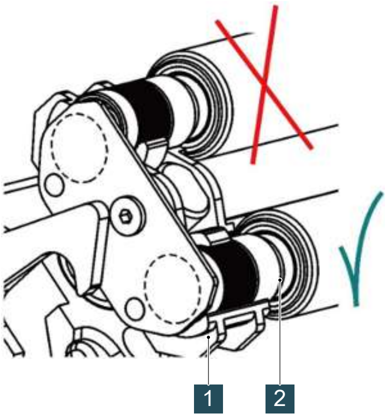


Figure 350: Examples of the installation of the top detaching rollers

3. Push the top detaching rollers fully into the bottom of the saddle 1.

   ⇨ The top detaching rollers are installed.

4. Put the web guide 3 into the holder 4 on both sides.

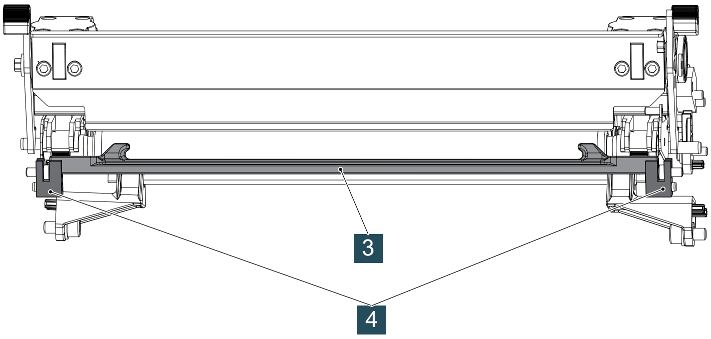


Figure 351: Web guide

5. Close the holder 4.
6. Push down the holder with 2 hands until the latches on both sides engage correctly with the holder.

Result The holder of top detaching rollers is closed.

7.7.6 Pulling the Sliver into the Drafting System

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

⚠ CAUTION

Falling loading arm!

Risk of crushing the hands

- ▶ Do NOT put the hands below the loading arm when the loading arm becomes lowered.

1. Open the drafting system hood.
2. To move the sliver forward, push the jog button.
3. To put the slivers below the deflection rollers 2, lift the handles 1.

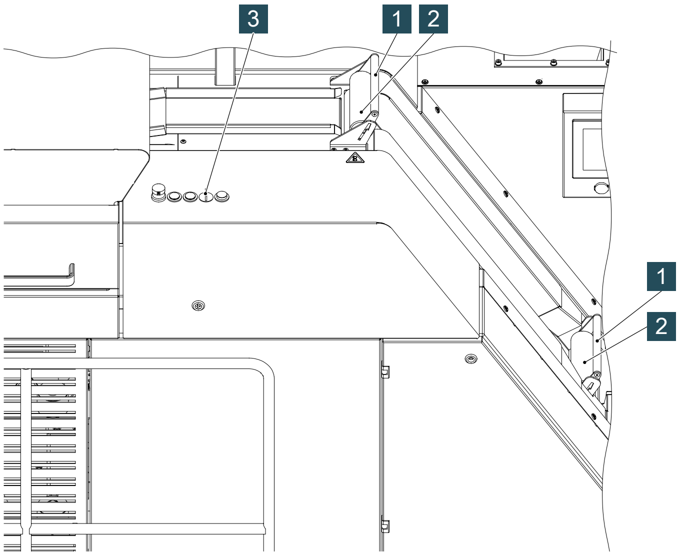


Figure 352: Deflection rollers

4. Turn the rotary switch 3 to the position I .
5. Release the rotary switch 3 quickly.

   ⇨ No load is applied to the drafting system.
6. Open the loading arm of the drafting system.
7. Lift the pressure bar 4.

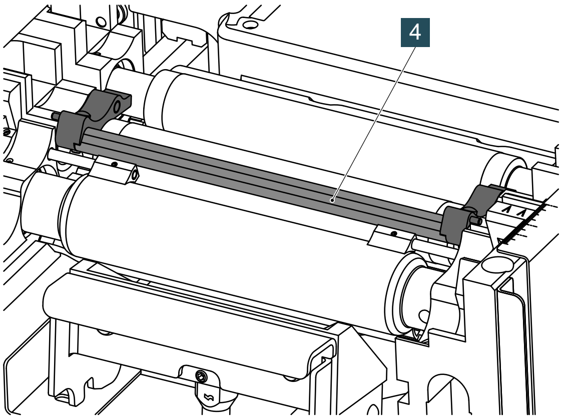


Figure 353: Holder with the pressure bar

8. Put the slivers on the bottom cylinders.

   ⇨ The slivers pass below the pressure bar 4.

9. Make sure that the sliver s are parallel and do not go across each other.

10. **CAUTION! Falling loading arm! Risk of crushing the hands.** Close the loading arm of the drafting system.

Result The slivers are pulled into the drafting system.

7.7.7 Pulling the Material through the Web Funnel

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Open the drafting system hood.
2. Tilt the web funnel 1 in the direction of the arrow.

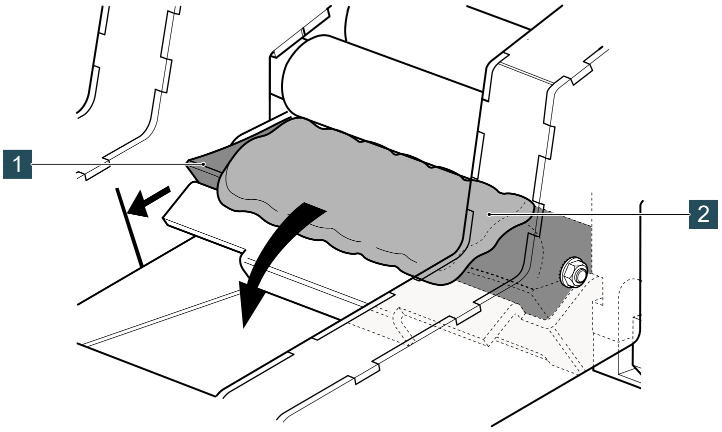


Figure 354: Web funnel

3. To move the web 2 forward more than the mark 3, push the jog button.

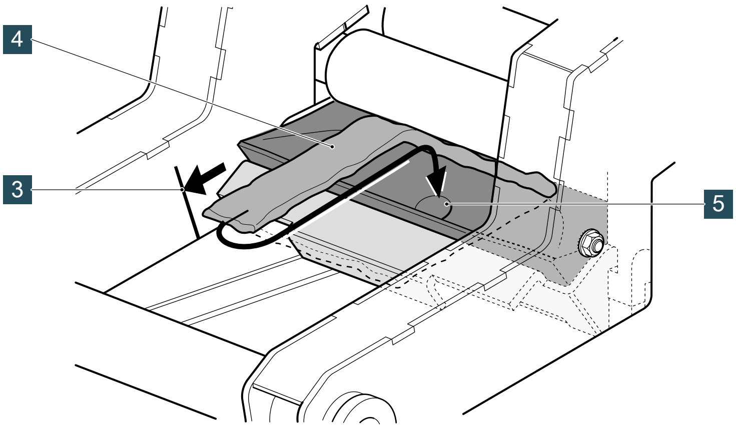


Figure 355: Web funnel insert

4. Detach the web 2 at the mark 3.
5. To make the web smaller, remove approximate 1/4 of the web mass.
6. Insert the lightly twisted web tip 4 into the web funnel insert 5.
7. Turn the rotary switch to the position II and hold the rotary switch.
   - ⇨ The load is applied to the drafting system.
   - ⇨ The blow pulse moves the web tip 4 to the sliver funnel.
   - ⇨ The web tip 4 is pulled through the delivery disks 6 and into the coiler tube 7.

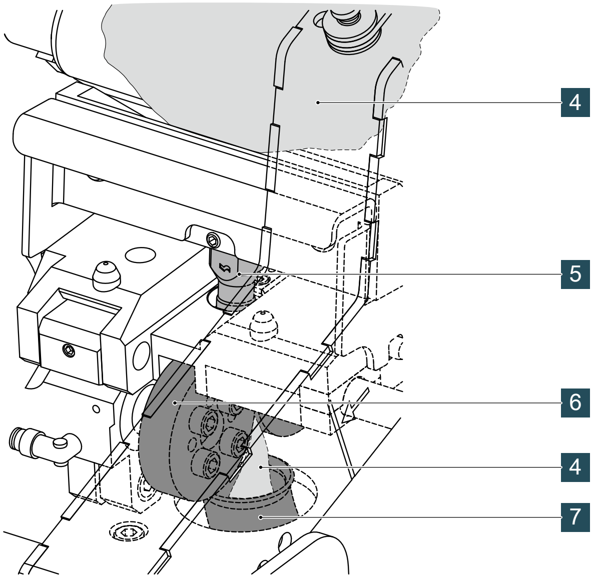


Figure 356: Web tip in the delivery disks

8. If the web tip 4 is not pulled through the web funnel insert 5, turn the rotary switch to the position II and hold it for several seconds.
9. Move back the web funnel 1 to its working position.

Result The material is pulled through the web funnel.

7.7.8 Starting a Can Change Manually

The can is possible to be changed manually in 1 of the conditions that follow:

- The can is not fully filled.
- The empty can is missing.

1. To start a can change, tap the key **Change can** in the data screen of the simple mode.

Result The can change is started manually.

7.7.9 Measuring the Noil Percentage

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ The sliver length for the noil measurement is set in the data screen 2.3.1.
- ✓ An empty can is put to the work position in the delivery unit.

1. Open the cover 2.

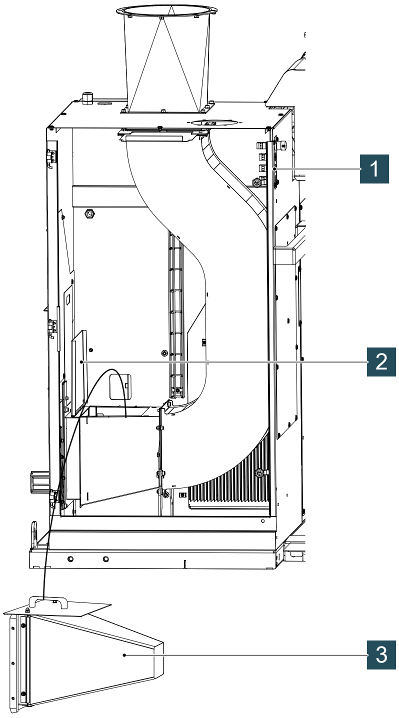


Figure 357: Noil collector

2. Put the noil collector 3 into the machine.

   ⇨ The machine is in the condition of noil measurement.

3. Remove the sliver from the coiler.

4. Push the white noil measurement button 1.
5. After the machine is stopped, remove the noil collector 3.
6. Collect the noils from the noil collector 3.
7. Close the cover 2.
8. Remove the sliver that is made during the noil measurement.
9. To calculate the noil percentage, weigh the sliver and the noils.
10. To get an accurate value, do the noil measurement procedure minimum 3 times.

Result The noil percentage is measured.

7.7.10 Removing the Sliver Sample

1. Start a can change manually.
2. To collect the sliver sample, put a cardboard onto the can.
3. To start the machine, push the start button
4. To stop the machine after a short time, push the stop button.
5. Change the can.
6. Remove the cardboard that has the sliver sample from the can.
7. Divide the sliver sample.

Result The sliver sample is removed.

7.7.11 Setting the Feed Amount

The feed amount is to be adapted to the batt weight that is between 60 ktex to 80 ktex for each combing cycle.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The feed amount is selected. (*refer to* ▸ *90*)
- ✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Ratchet Wheels

1. To remove the white ratchet wheel 1, turn the white ratchet wheel 1 clockwise.

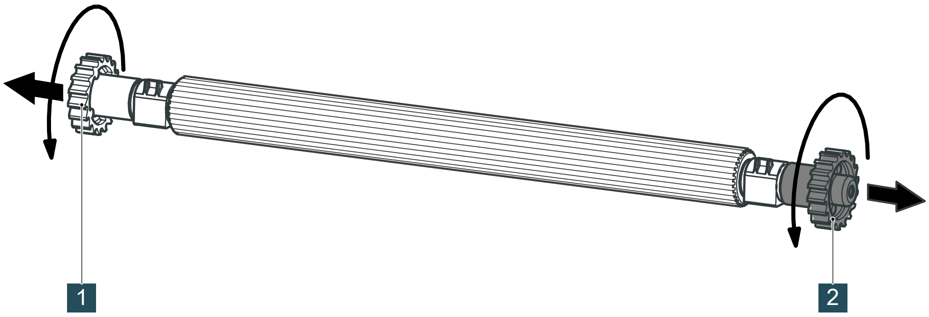


Figure 358: Removal of the ratchet wheels

2. To remove the black ratchet wheel 2, turn the black ratchet wheel 2 counterclockwise.

Assembling the Feed Cylinder

1. Clean the shaft 5 and the plastic bushing 7.

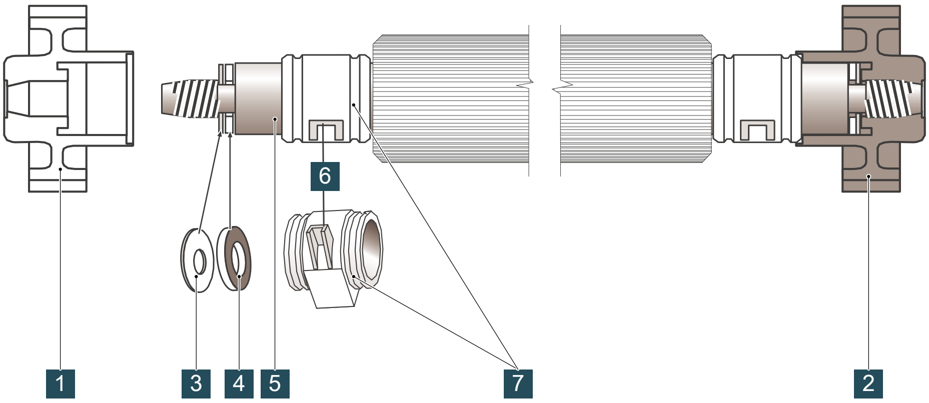


Figure 359: Assembly of the feed cylinder

2. Lubricate the shaft 5 and the plastic bushing 7.
3. Push the plastic bushing 7 onto the shaft 5.
4. Make sure that the notch 6 is at the front.
5. Put the middle washer 4 onto the shaft 5.
6. Make sure that the black side of the middle washer 4 touches the shaft shoulder 5.
7. Put the washer 3 onto the shaft 5.

Installing the Ratchet Wheels

1. Put the black ratchet wheel 2 onto the shaft shoulder 5 that has the right-hand thread.

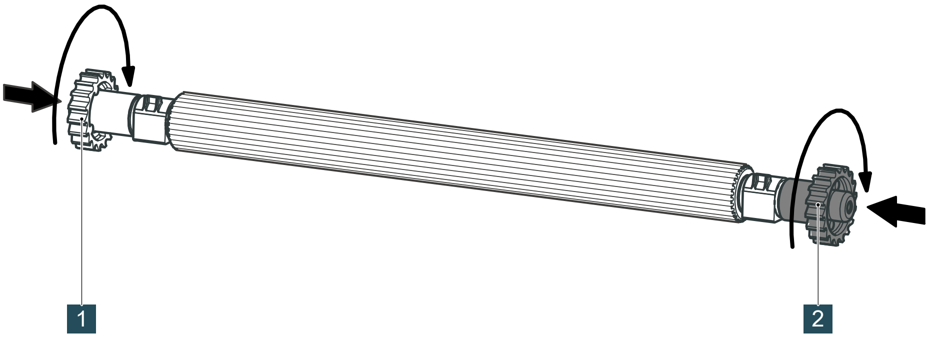


Figure 360: Installation of the ratchet wheel

2. To tighten the black ratchet wheel 2, turn the black ratchet wheel 2 clockwise.
3. Put the white ratchet wheel 1 onto the shaft holder 5 that has the left-hand thread.
4. To tighten the white ratchet wheel 1, turn the white ratchet wheel counterclockwise.

Tightening the Ratchet Wheels

1. Put the feed cylinder 10 against the edge of the sliver table 9.

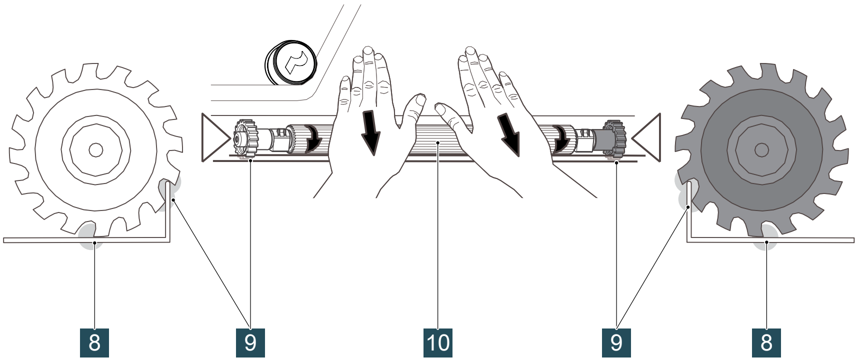


Figure 361: Tightening the ratchet wheels

2. Hook the teeth of the 2 ratchet wheels onto the edge of the sliver table 9.
3. Push down the feed cylinder 10 vertically with 2 hands.

   ⇨ The 2 ratchet wheels touch the sheet 8.
4. Turn the feed cylinder 10 with 2 palms in the direction of the arrow without decreasing the pressure.

   ⇨ The 2 ratchet wheels are tightened equally and teeth are aligned.
5. Check the noil percentage when the feed amount is changed (*refer to ▶ 303*).
6. If necessary, adjust the detaching distance (*refer to ▶ 311*).

7. Enter the new feed amount into the data screen 1.5.3.
   - ⇨ The noil percentage is changed.
   - ⇨ The piecing is changed.
8. Set the top comb in accordance with the new feed amount.
9. Check and make sure that the table funnel diameter is correct.
10. Set the table tension.
11. Check and make sure that the draft is correct.
12. Check and make sure the can content is correct.

Result The feed amount is set.

7.7.12 Selecting the Circular Comb Type

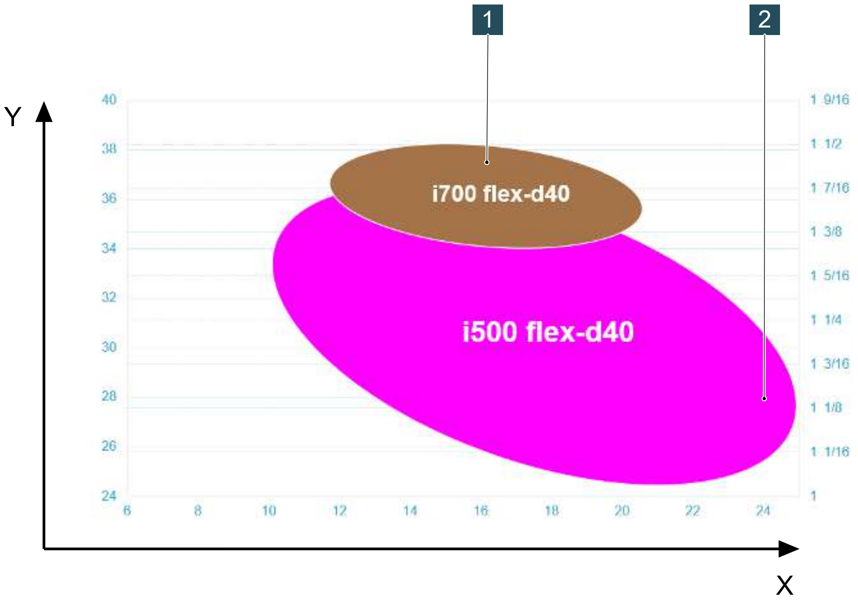


Figure 362: Circular comb type

1	Extra-long staple	2	Medium/long staple
X	Noil level [%]	Y	Commercial staple

1. Select the type of the circular comb in accordance with the staple length of the cotton.
2. Replace the circular comb (*refer to ▸ 553*).

Result The circular comb type is selected.

7.7.13 Selecting the Feed Type

The feed type must be selected before setting the detaching distance.

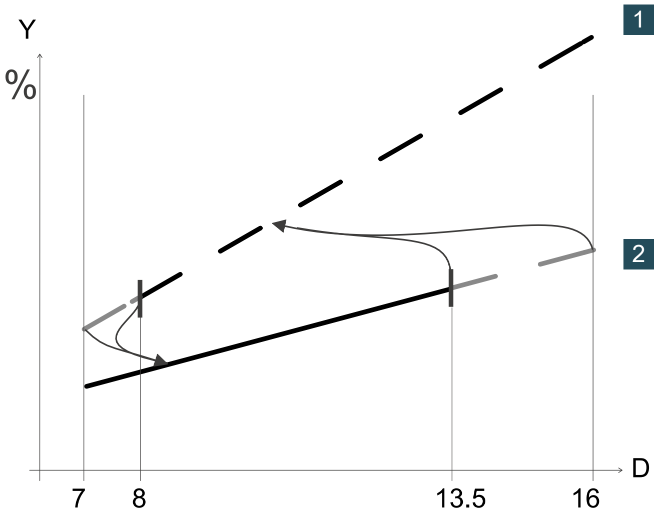


Figure 363: Feed type

1	Backward feed	2	Forward feed
D	Detaching distance	Y	Noil

For example, if the detaching distance is set larger than 13.5 mm to get the target noil percentage, the feed type is necessary to be changed to backward feed.

1. If the detaching distances are ≤13.5 mm, select the backward feed.

   ⇨ More noil is extracted with the same detaching distance.
2. Install short feeding pawls for the backward feed.
3. If the detaching distances are ≥ 8 mm, select the forward feed.

   ⇨ Fewer noil is extracted with the same detaching distance.
4. Install long feeding pawls for the forward feed type.

Result The feed type is selected.

7.7.14 Installing the Feeding Pawls

Long feeding pawls are used for forward feed (FF).

Short feeding pawls are used for backward feed (BF).

Prerequisites Make sure that the criteria are obeyed:

✓ A torque wrench (0.5 Nm) is to be used.

1. Make sure that the torsion rod 2 is in a good condition (the elasticity of the plastic is good and there is no deformation).

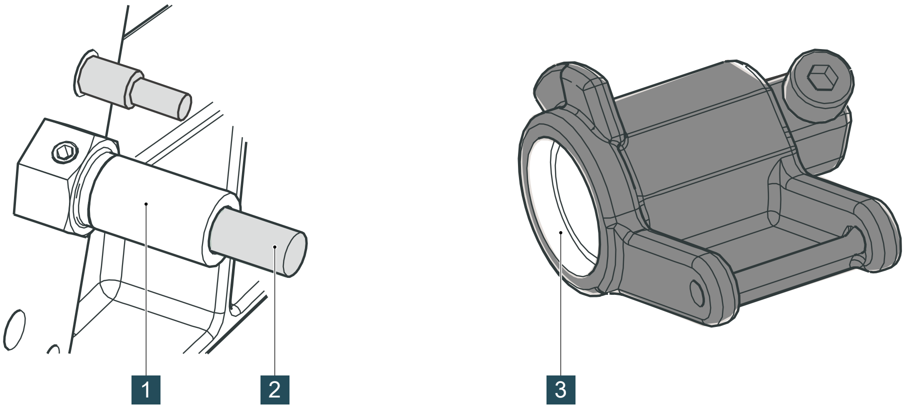


Figure 364: Feeding pawls

2. Clean the bolt 1 and the feeding pawl 3.
3. Apply oil to the bolt 1 to lubricate the bolt 1.

Installing the Long Feeding Pawls

1. Open the nipper.
2. Make sure that the adjacent nipper is closed.
3. Push in the pin 4 with the connecting link 5.

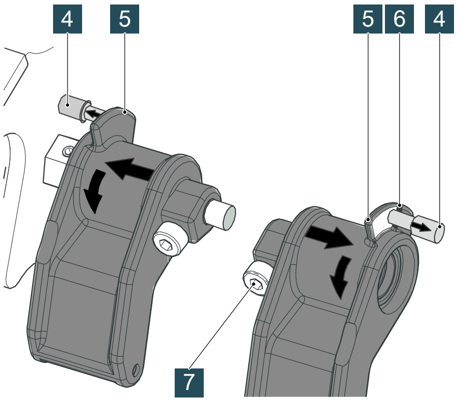


Figure 365: Installation of long feeding pawls

4. Push down the feeding pawl until the pin 4 touches the limit stop 6.
5. Tighten the screw 7 with a tightening torque of 0.5 Nm.
6. Turn up the feeding pawl.

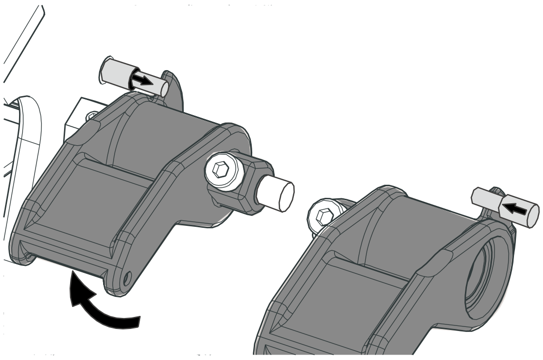


Figure 366: Direction of turning the feeding pawls

- ⇨ The pin 4 comes out quickly.

7. Release the feeding pawl.
   - ⇨ The connecting link 5 connects with pin 4.
   - ⇨ The feeding pawl is pre-loaded.

Installing the Short Feeding Pawls

1. Remove the feed cylinder.
2. Close the nipper.
3. Make sure that the adjacent nipper is open.
4. Push in the pin 4 with the connecting link 5.

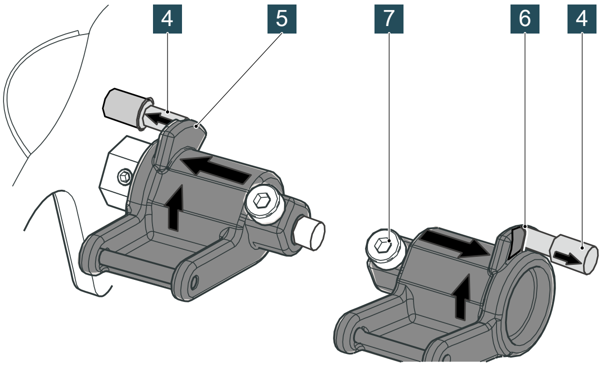


Figure 367: Installation of short feeding pawls

5. Push up the feeding pawl until the pin 4 touches the limit stop 6.
6. Tighten the screw 8 with a tightening torque of 0.5 Nm.
7. Turn down the feeding pawl.
   - ⇨ The pin 4 comes out quickly.
8. Release the feeding pawl.
   - ⇨ The connecting link 5 connects with pin 4.

⇨ The feeding pawl is pre-loaded.

Result A feeding pawl is installed.

7.7.15 Setting the Detaching Distance

This chapter contains the information about how to set the detaching distance.

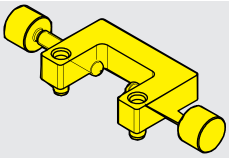
7.7.15.1 Changing the Detaching Distance

The detaching distance has an effect on the noil extraction.

To increase the noil percentage, increase the detaching distance (e.g. from 7 to 8). To decrease the noil percentage, decrease the detaching distance (e.g. from 8 to 7).

Prerequisites Make sure that the criteria are obeyed:

✓ An adjusting device is to be used.

Tool	Tool Name	Function Description
	Adjusting device	The adjusting device is used for setting the detaching distance.

NOTICE

Collision of machine parts!

Machine damage by collision of top combs and detaching top rollers

▶ When the detaching distance is changed, set the position of top combs.

1. Set the machine to index 24 (*refer to* ▸ *290*).
2. To lock the gear with the index locking pin 1, turn and push the pin 1 into the lid 2, then turn the pin 1 clockwise lightly to attach the pin to the lid 2.

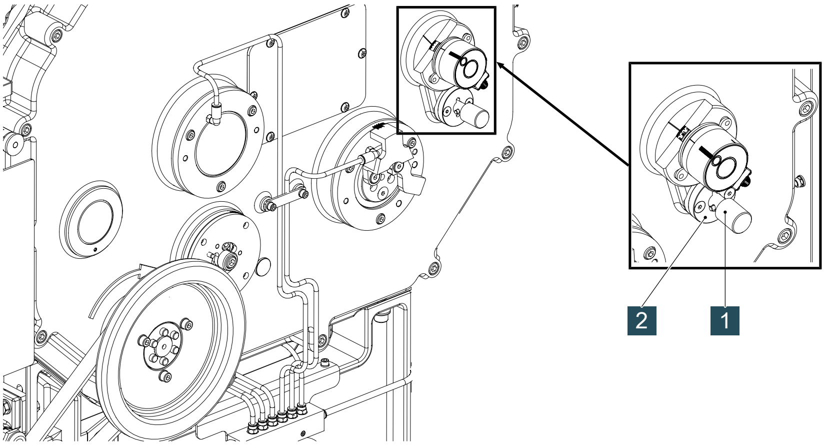


Figure 368: Index locking pin

⇨ The gear is locked by the locking pin 1.

3. If the locking pin 1 is not possible to be pushed into the lid 2, release the brake and turn the pulley until the pin is attached to the lid 2.
4. Remove the top comb (*refer to ▸ 565*).
5. Loosen the screws 4 of the top comb carrier 3.

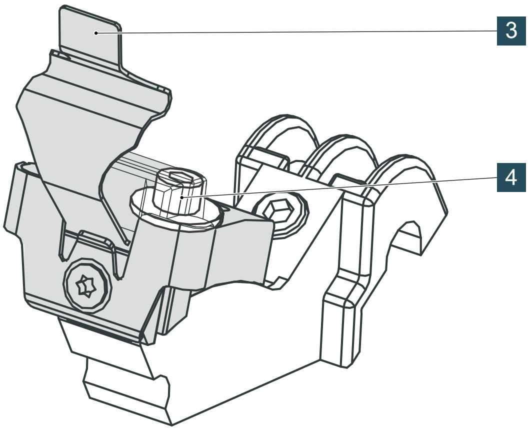


Figure 369: Top comb carrier

6. Loosen the 3 screws 6 until the screw heads touch the clamping piece 8.

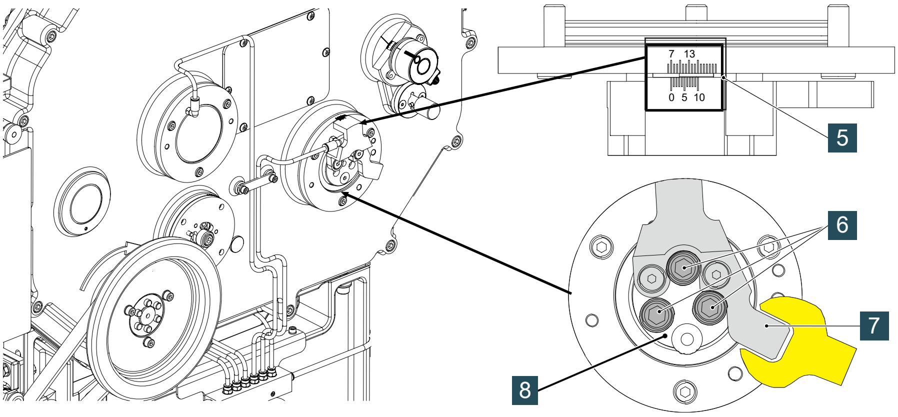


Figure 370: Central setting of the detaching distance

7. Use an open-end wrench no. 24 to roughly set the lever 7 to the desired scale on the ruler 5.
8. Attach the adjusting device 9 to the holes 10.

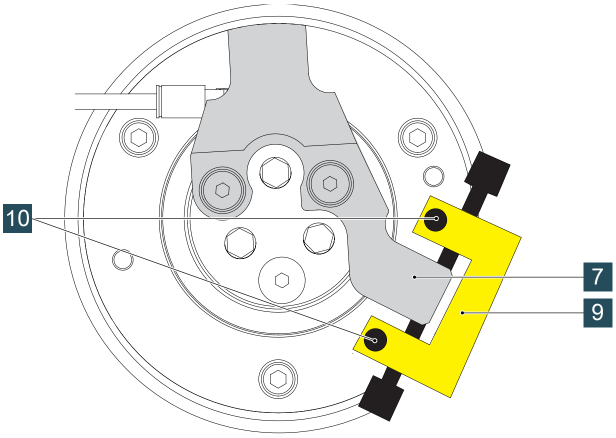


Figure 371: Adjusting device

9. Use the adjusting device 9 to set the detaching distance accurately.
   ⇨ The detaching distance is set to precision of 0.1 mm.
10. Tighten the 3 screws 6 with the tightening torque of 135 Nm.
11. Remove the adjusting device 9.
12. Turn the pin 1 counterclockwise lightly to unlock the gear.
    ⇨ The pin 1 moves out from the lid for a specific distance.
13. If the change of the detaching distance is more than 3 mm, check the distance between the circular comb and the nipper (*refer to* ▸ *379*).

Result The detaching distance is changed.

7.7.15.2 Setting the Eccentric Shaft

NOTICE

Collision of machine parts

Machine damage by collision of the comb and the nipper

▶ When the detaching distance or the feed type is changed, set the eccentric shaft.

The scale on the eccentric shaft has 2 read indexes BF and FF.

– If the feed type (*refer to* ▸ *307*) is set to **backward feed**, read the scale **BF**.

– If the feed type (*refer to* ▸ *307*) is set to **forward feed**, read the scale **FF**.

Prerequisites Make sure that the criteria are obeyed:
✓ The machine is set to index 24.
✓ A D6 × 100 pin is to be used.

1. Loosen the 2 screws 1.

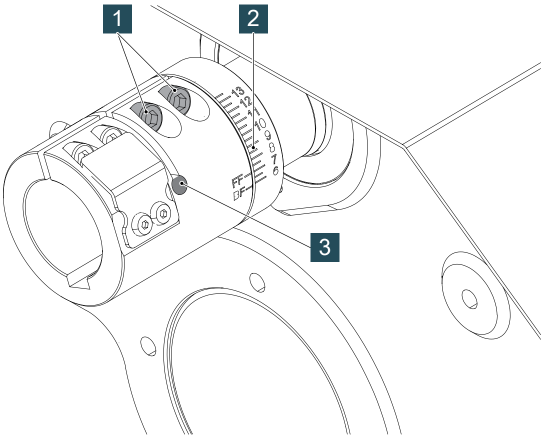


Figure 372: Scale for the detaching distance on the rear of the head stock

2. Turn the eccentric shaft to a scale 2 in accordance with the detaching distance.

   ⇨ The scale is the same as the current detaching distance.
3. Insert the D6 × 100 pin into the hole 3.
4. Tighten the 2 screws 1 with the tightening torque of 18 Nm.
5. Remove the D6 × 100 pin from the hole 3.

Result The eccentric shaft is set.

7.7.15.3 Examining the Detaching Distance and the Penetration Depth of the Top Comb

The penetration depth must be sufficiently large to have the necessary sliver quality. If the web has holes, the penetration depth must be decreased.

Detaching Distance	Maximum Penetration Depth of the Top Comb
< 7.5 mm	+0.75 mm
≥ 7.5 mm	+1.00 mm

1. Read the detaching distance from the central adjustment scale.
2. Determine the top comb penetration.
3. Make sure that the target detaching distance is within the permitted range in the table that is shown before.
4. If the current detaching distance or the penetration depth is not in the permitted range, set the detaching distance or the penetration depth of the top comb.

Result The detaching distance and the penetration depth of the top comb penetration are examined.

7.7.16 Selecting the Top Comb Type

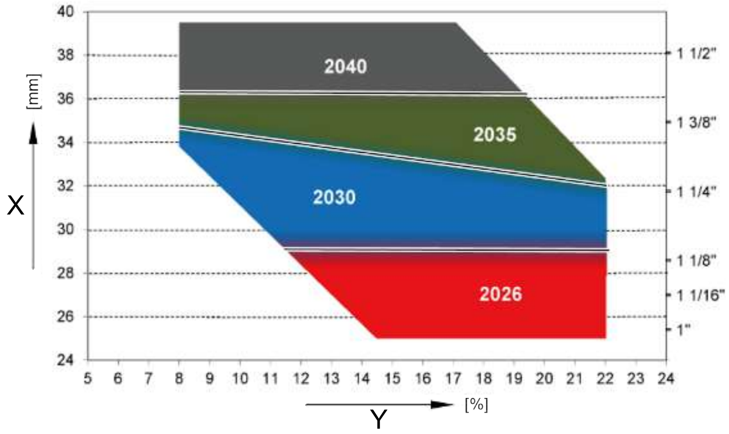


Figure 373: Top comb type

X	Commercial staple	Y	Noil percentage

The top comb is mainly depending on Micronaire / fineness.

The top comb must be over the rear position of the fibers during the detaching. The circular combed part of the fiber and the top combed part of the fiber must have a small overlap. This overlapping helps to remove the neps, impurities and seed coat fragments. This results lower IPI values.

7.7.17 Adjusting the Penetration Depth of the Top Comb

NOTICE

Collision of machine parts!

Machine damage by collision of top combs and detaching top rollers

▶ When the detaching distance is changed, set the position of top combs.

The penetration depth of the top comb has an effect on the extraction of the neps. The penetration must be set in accordance with the necessary sliver quality. If the web has holes, the penetration depth must be decreased.

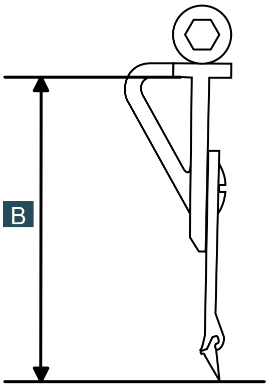


Figure 374: Penetration depth of the top comb

Position of the Eccentric	Penetration Depth **B**
+1	53.50 mm
+0.75	53.25 mm
+0.5 (default value)	53.00 mm
+0.25	52.75 mm
0	52.50 mm
-0.25	52.25 mm
-0.5	52.00 mm
-0.75	51.75 mm
-1	51.50 mm

Prerequisites Make sure that the criteria are obeyed:

- ✓ The detaching distance and the penetration depth of the top comb are examined (*refer to* ▸ *314*).
- ✓ The top-comb setting device is to be used.

1. Remove the top comb.
2. Turn the 2 eccentrics 2 to the position +1.

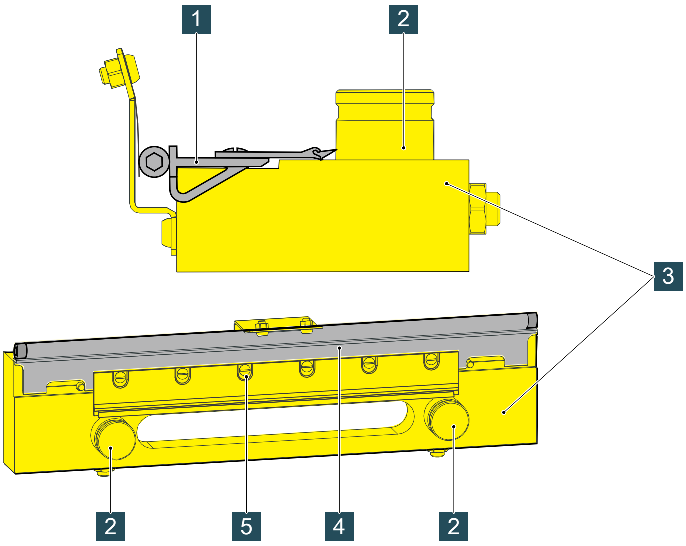


Figure 375: Top-comb setting device

3. Put the top comb 1 in the onto the top-comb setting device 3.

   ⇨ The leaf spring pushes the top comb 1 to the edge of the top-comb setting device tightly.

4. Loosen all the bolts 5.
5. Adjust the 2 eccentrics 2 to the necessary penetration depth in accordance with the table that is shown before.
6. Push the top comb blade 4 lightly against the eccentric.
7. Tighten the bolt 5 from the center to the 2 sides with the tightening torque of 2.5 Nm.

Result The penetration depth of the top comb is adjusted.

7.7.18 Doing the Basic Setting of the Top Combs

Prerequisites Make sure that the criteria are obeyed:

✓ The top comb gauge is to be used.

1. Loosen the screws 2.

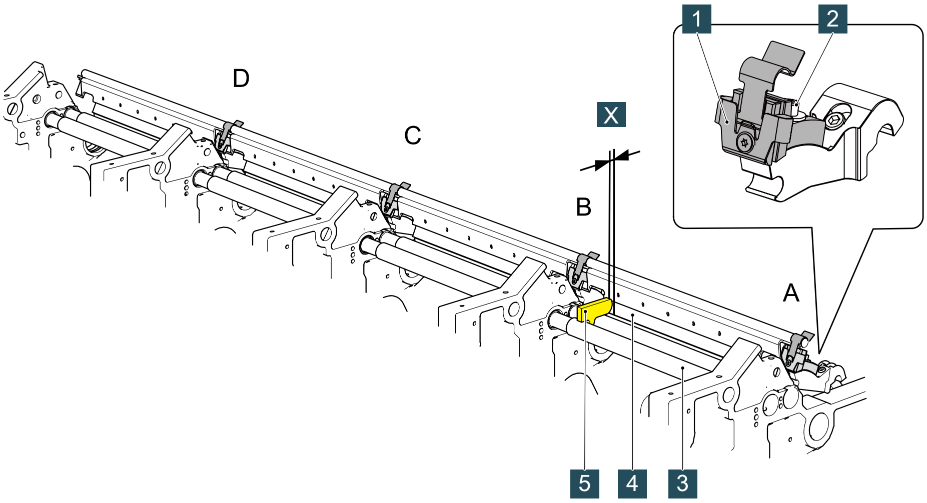


Figure 376: Front position of the top combs

2. Put the top comb gauge 5 onto the 2 bottom detaching rollers 3.
3. To set the distance X between the top comb 4 and the top comb gauge 5 to 0.2 mm – 0.3 mm, move the holder 1.
4. Adjust the holder A and tighten the screws 2 lightly.
5. Adjust the holder B and tighten the screws 2 lightly.
6. Check and adjust the holder A again and tighten the screws 2.
7. Adjust the holder C and tighten the screws 2 lightly.
8. Check and adjust the holder B again and tighten the screws 2.
9. Adjust all top combs in this procedure.

Checking the Position of the Top Comb

1. Set the machine to index 24.
2. Put the top comb gauge 5 onto the 2 bottom detaching rollers 3.

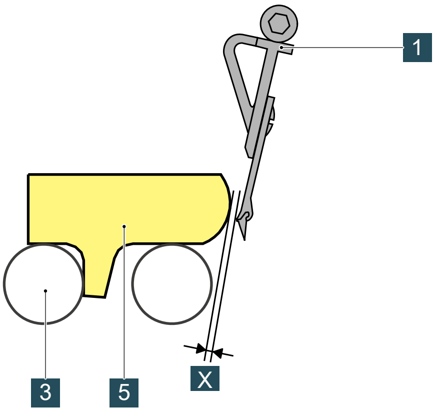


Figure 377: Top comb gauge on the bottom detaching rollers

3. Measure the distance X.

   ⇨ If the distance X is 0.2 mm, the setting is correct.

4. If the distance X is not 0.2 mm, adjust the distance X.

Result The basic setting of top combs are done.

7.7.19 Checking the Distance Between the Top Comb and the Circular Comb

1. Set the machine to index 39.
2. Tilt up the holder of the top detaching rollers.
3. Measure the distance A between top comb and circular comb with a wide feeler gauge.

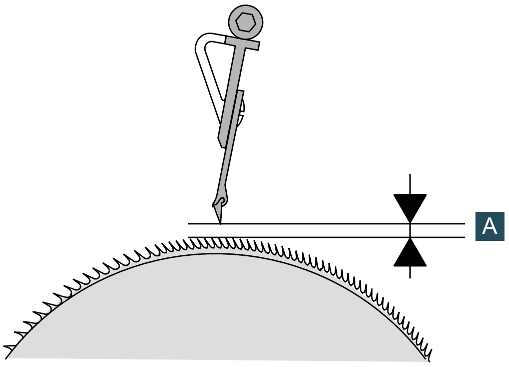


Figure 378: Distance between the top comb and the circular comb

4. If the distance A is less than 0.5 mm, set the top combs higher.
5. Check the detaching distance and penetration depth.
6. Monitor the impurities on the top combs.
7. Check if the sliver quality is good.

Result The distance between the top comb and the circular comb is checked.

7.7.20 Setting the Relative Brush Speed

1. Go to the data screen 1.5.1.1.
2. Enter the relative brush speed in the related field.

Result The relative brush speed is set.

7.7.21 Adjusting the Suction Power

CAUTION

Sharp edges!

Risk of hand injuries

▶ Wear safety gloves.

The suction value at each nipper must be equal supplied.

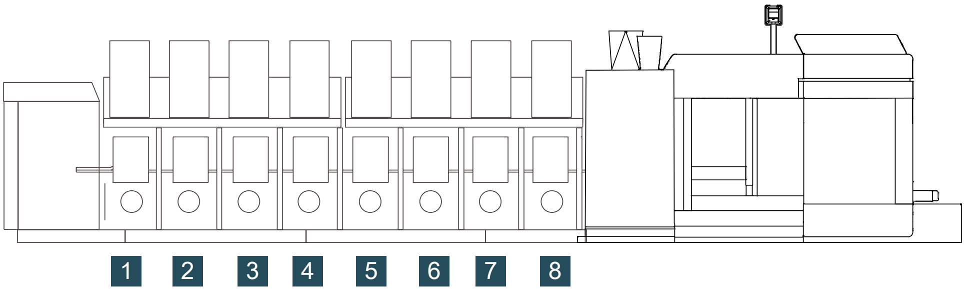


Figure 379: Layout of each combing unit

Combing Position	Value of Distance X
1	30 mm
2	28 mm
3	26 mm
4	23 mm
5	20 mm
6	18 mm
7	16 mm
8	14 mm

1. Loosen the screws 10.

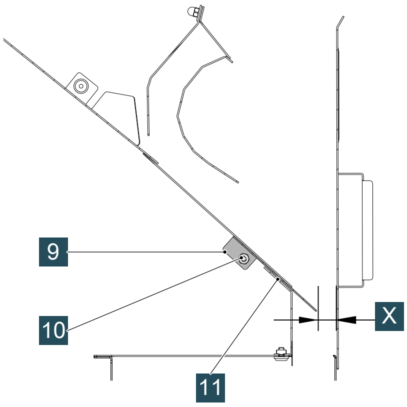


Figure 380: Distance at the combing unit

2. To set the distance X at each combing position in accordance with the table that is shown before, move the slider 9
3. Make sure that the slider 9 is adjacent to the metal plate 11.
4. Tighten the screw 10 of each combing unit.

Result The suction power is adjusted.

7.7.22 Adapting the Fly Duct to the Staple

The fly ducts must be adapted to the staple. The suction slot must be covered with the sheet 2. Trials is necessary for uncertain cases.

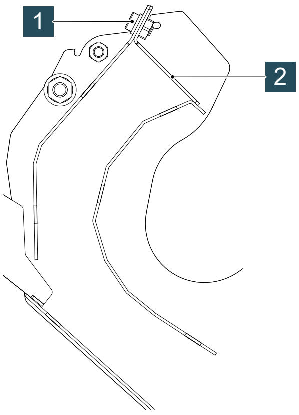


Figure 381: Fly duct

Staple Conditions	Actions
– Fiber length ≤ 31.7 mm (1 ¼'') – Micronaire ≤ 4.0 – Nipping rate > 460/min – Batt weight > 76 g/m	1. Remove the screw 1. 2. Remove the cover 2. ⇨ The suction slot is open.

Staple Conditions	Actions
– Fiber length ≥ 31.7 mm(1 ¼’’) – Micronaire > 4.0 – Nipping rate ≤ 440/min – Batt weight ≤ 74 g/m	1. Install the cover 2. 2. Tighten the screw 1. ⇨ The suction slot is closed.

1. Do the steps in accordance with the table that shown before.

Result The fly duct is adapted to the staple.

7.7.23 Attaching the Fly Duct Cover

1. Put the fly duct cover 1 at the bottom position 2 of the fly duct 3.

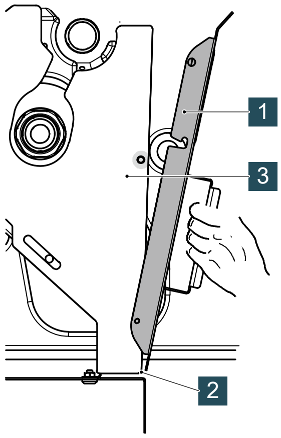


Figure 382: Putting the fly duct cover

2. Push the cover 1 toward the fly duct.

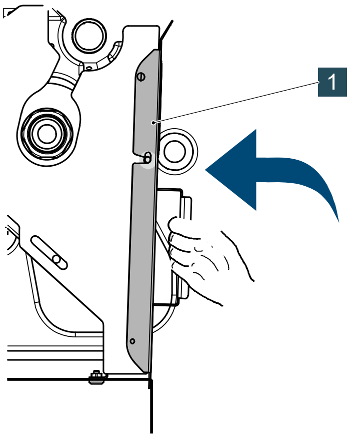


Figure 383: Pushing the fly duct cover

3. Push the cover 1 downward.

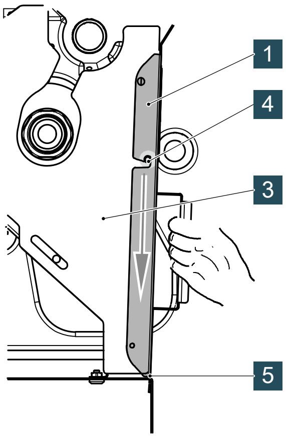


Figure 384: Pushing down the fly duct

⇨ The cover 1 is fixed in position by the pin 4.

4. Check if the cover 1 is correctly engaged at the guide 5 and at the pin 4.

Result The fly duct cover is attached.

7.7.24 Setting the Tension VRS at the Feed Unit

The diameter of pulley at the position W1 decides the tension at the feed unit.

Tension at the Feed Unit	Pulley Diameter at the Position W1 (mm)
1.01	39.9 (*)
1.02	39.5
1.03	39.1
(*): Standard supply content	

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Select the pulley in accordance with the table that is shown before.
2. Replace the pulley with the selected pulley.

Result The tension VRS at the feed unit is set.

7.7.24.1 Replacing the Pulley at the Position W1

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Open the cover of break draft belt.
2. Remove the belt 1 at the position W1 (*refer to* ▸ *591*).

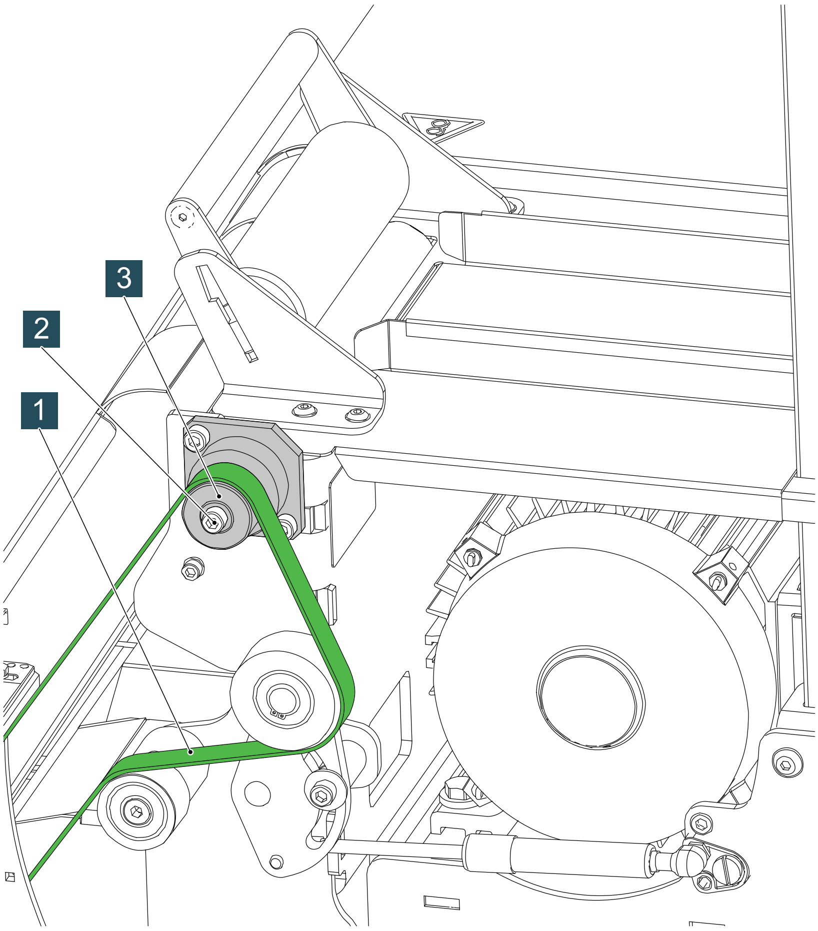


Figure 385: Pulley at the position W1

3. Remove the screw 2.
4. Remove the pulley 3.
5. Install the new pulley with the screw 1.
6. Install the belt 1 (*refer to ▸ 591*).
7. Close the cover of break draft belt.

Result The pulley at the position W1 is replaced.

7.7.25 Setting the Feed Tension VE

The diameter of pulley at the position of W2 decides the feed tension.

Feed Tension VE	Pulley Diameter at the Position W2 (mm)
1.01	30.6 (*)
1.02	30.3
1.03	29.9
(*): Standard supply content	

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Select the pulley in accordance with the table that is shown before.
2. Replace the pulley with the selected pulley.

Result The feed tension VE is set.

7.7.25.1 Replacing the Pulley at the Position W2

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

✓ A torque wrench with a tightening torque 40 Nm is to be used.

1. Open the cover of main draft belt.
2. Remove the belt 3 at the position W2 (*refer to ▸ 593*).

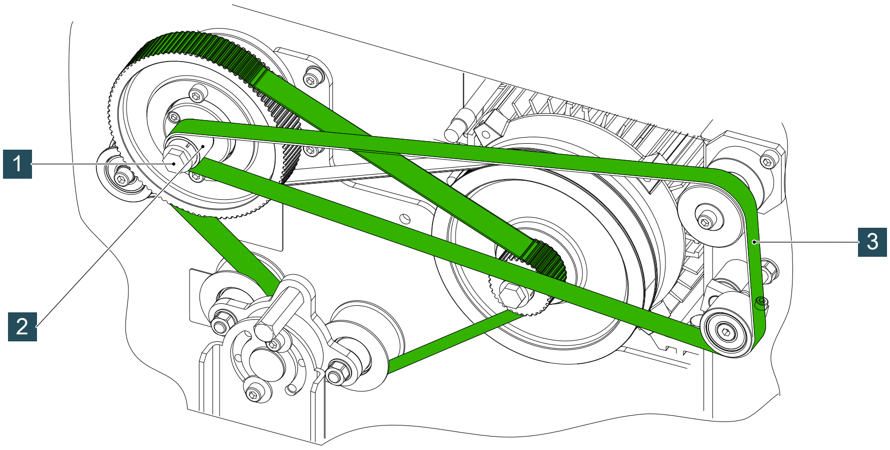


Figure 386: Pulley at the position W2

3. Remove the screw 1 with a box wrench.
4. Replace the pulley 2.
5. Install the screw 1 with a tightening torque of 40 Nm.
6. Install the belt 3 (*refer to ▸ 593*).
7. To apply tension to the belt 3, turn the tension roller counterclockwise to the limit stop with the hexagonal key.
8. Close the cover of main draft belt.

Result The pulley at the position W2 is replaced.

7.7.26 Setting the Delivery Tension VA

The pulley diameter at the position W3 determines the delivery tension.

Delivery Tension VA	Pulley Diameter at the Position W3 (mm)
1.01	69.6
1.02	68.9
1.03	68.3

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Select the pulley in accordance with the table that is shown before.
2. Replace the pulley with the selected pulley.

Result The delivery tension VA is set.

7.7.26.1 Replacing the Pulley at the Position W3

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ A counter holder is to be used.

Removing the Pulley at the Position W3

1. Open the drafting system hood.
2. Open the cover of main draft belt.
3. Remove the belt 1 at the position W3 (*refer to ▸ 593*).
4. Put the counter holder 4 on the pulley 2.

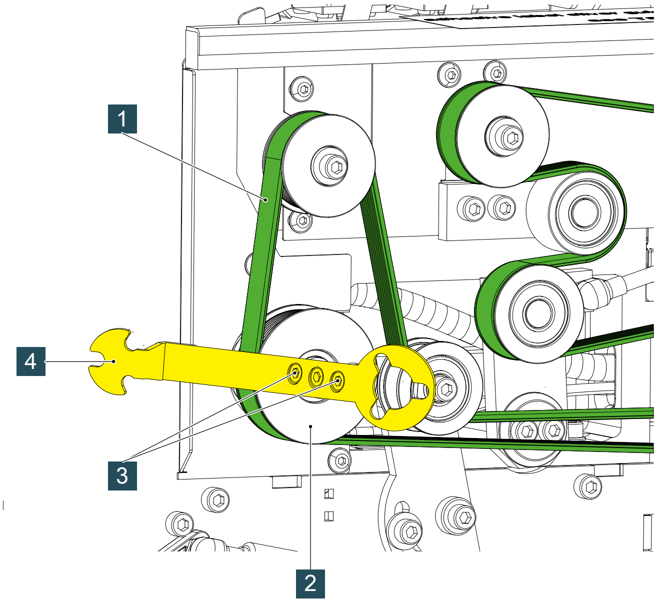


Figure 387: Pulley at the position W3

5. Remove the bolts 3 with the hexagonal key.

6. Remove the counter holder 4.
7. Remove the pulley 2.

   ⇨ The pulley at the position W3 is removed.

Installing the Pulley at the Position W3

1. Put the new pulley to the correct position.
2. Install the bolt 3.
3. Put the counter holder 4 on the pulley 2.
4. Tighten the bolts 3 with the hexagonal key.
5. Remove the counter holder 4.
6. Install the belt 1 at the position W3 (*refer to ▸ 593*).
7. Close the cover of main draft belt.
8. Close the drafting system hood.

   ⇨ The pulley at the position W3 is installed.

Result The pulley at the position W3 is replaced.

7.7.27 Checking the Delivered Sliver Weight

The delivery sliver weight must be checked at intervals. Corrections must be made if the delivery sliver weight is not in the tolerance range.

1. Produce 100 m of sliver.
2. Check the actual delivery sliver weight.
3. Compare the delivery sliver weight with the target value.
4. If the value of the delivery sliver weight is not in the tolerance range, set the total draft (*refer to ▸ 327*).

Result The delivered sliver weight is checked.

7.7.28 Setting the Total Draft V

The total draft V determines the delivery sliver weight. The draft in the drafting system is in the range of 10.9 – 26.0 fold.

The total draft is calculated with the formula: V (total draft) = HV (main draft) × VV (break draft)

The pulley diameters at the positions Nw1 and Nw2 determine the total draft V.

Total Draft V	Pulley Diameter at the Position Nw1	Pulley Diameter at the Position Nw2
26.0	24 mm	113 mm (*)
25.1		109 mm (*)

Total Draft V	Pulley Diameter at the Position Nw1	Pulley Diameter at the Position Nw2
24.2		105 mm
23.7		103 mm (*)
23.2		101 mm
22.3		97 mm
21.4		93 mm
21.5	29 mm	113 mm (*)
20.8		109 mm (*)
20.0		105 mm
19.6		103 mm (*)
19.2		101 mm
18.5		97 mm
17.7		93 mm
18.4	34 mm	113 mm (*)
17.7		109 mm (*)
17.1		105 mm
16.7		103 mm (*)
16.4		101 mm
15.8		97 mm
15.1		93 mm
15.6	40 mm	113 mm (*)
15.1		109 mm (*)
14.5		105 mm
14.2		103 mm (*)
13.9		101 mm
13.4		97 mm
12.8		93 mm
13.3	47 mm	113 mm (*)
12.8		109 mm (*)
12.3		105 mm
12.1		103 mm (*)
11.9		101 mm
11.4		97 mm
10.9		93 mm
(*): Standard delivery content		

1. Select the pulley diameters in accordance with the table that is shown before.
2. Replace the pulleys at the positions Nw1 and Nw2 with the selected pulleys.
3. Enter the diameters of the new pulley in the data screen 1.3.5.1.

Result The total draft V is set.

7.7.28.1 Replacing the Pulley at the Position Nw1

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ A torque wrench with a tightening torque 40 Nm is to be used.

Removing the Pulley at the Position Nw1

1. Open the cover of main draft belt.
2. Remove the belt at the position W2 (*refer to ▶ 593*).
3. Remove the belt 1 at the position Nw1/Nw2 (*refer to ▶ 590*).

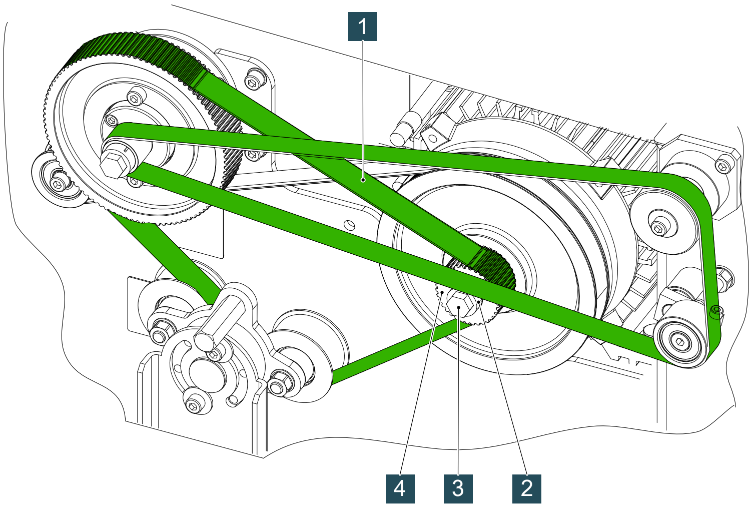


Figure 388: Drive system of the drafting system

4. Loosen the bolt 3.
5. Remove the pulley 4.

   ⇨ The pulley at the position Nw1 is removed.

Installing the Pulley at the Position Nw1

1. Put the new pulley to the correct position.
2. Attach the bolt 3 to the clamping sleeve 2 with the box wrench.
3. Tighten the bolt 3 with a tightening torque of 40 Nm.
4. Install the belt 1 (*refer to ▶ 590*).
5. Close the cover of main draft belt.

⇨ The pulley at the position Nw1 is installed.

Result The pulley at the position Nw1 is replaced.

7.7.28.2 Replacing the Pulley at the Position Nw2

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Pulley at the Position Nw2

1. Open the cover of main draft belt.
2. Remove the belt 4 at the position W2 (*refer to* ▶ *593*).

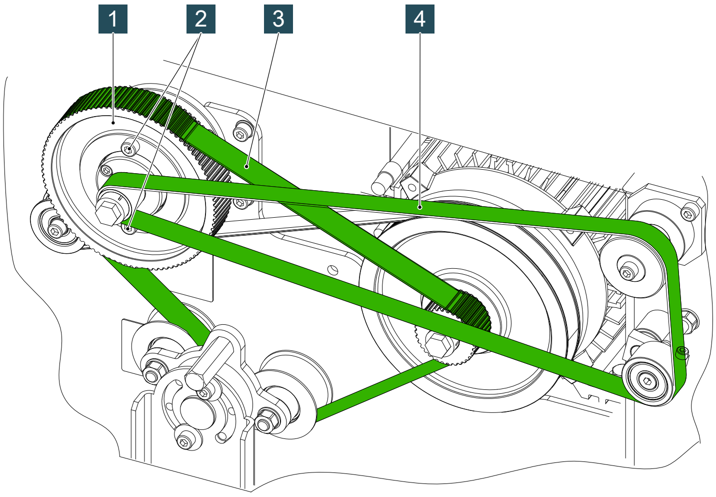


Figure 389: Drive system of the drafting system

3. Remove the belt 3 at the position Nw1/Nw2 (*refer to* ▶ *590*).
4. Loosen the screws 2.
5. Remove the pulley 1.

⇨ The pulley at the position Nw2 is removed.

Installing the Pulley at the Position Nw2

1. Put the new pulley to the correct position.
2. Tighten the screws 2.
3. Install the belt 3 (*refer to* ▶ *590*).
4. Install the belt 4 (*refer to* ▶ *593*).
5. Close the cover of main draft belt.

⇨ The pulley at the position Nw2 is installed.

Result The pulley at the position Nw2 is replaced.

7.7.29 Setting the Break Draft VV

The break draft VV is used to prepare the fiber mass, which guarantees a fault-free drafting procedure for the main draft HV.

Because the most applicable break draft VV and the related nipping line distance in the break draft zone have an effect on thin places and thick places in the yarn, the most applicable break draft VV and the related drafting system distance are to be found through tests involving final spinning down to the yarn.

The break draft is related to the raw material. The pulley at the position W4 determines the break draft VV.

Break draft VV	Pulley Diameter at the Position W4
1.15	59.8 mm
1.20	62.4 mm (*)
1.25	65.0 mm (*)
1.30	67.6 mm
1.35	70.2 mm (*)
1.40	72.8 mm
1.50	78.0 mm (*)
1.60	83.2 mm (*)
1.70	88.4 mm
(*): Standard delivery content	

1. Select the pulley in accordance with the table that is shown before.
2. Replace the pulley with the selected pulley.
3. Enter the selection into the data screen 1.3.5.1.

Result The break draft VV is set.

7.7.29.1 Replacing the Pulley at the Position W4

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ A torque wrench with a tightening torque 40 Nm is to be used.

Removing the Pulley at the Position W4

1. Open the cover of break draft belt.
2. Remove the belt 4 at the position W4 (*refer to* ▶ *594*).

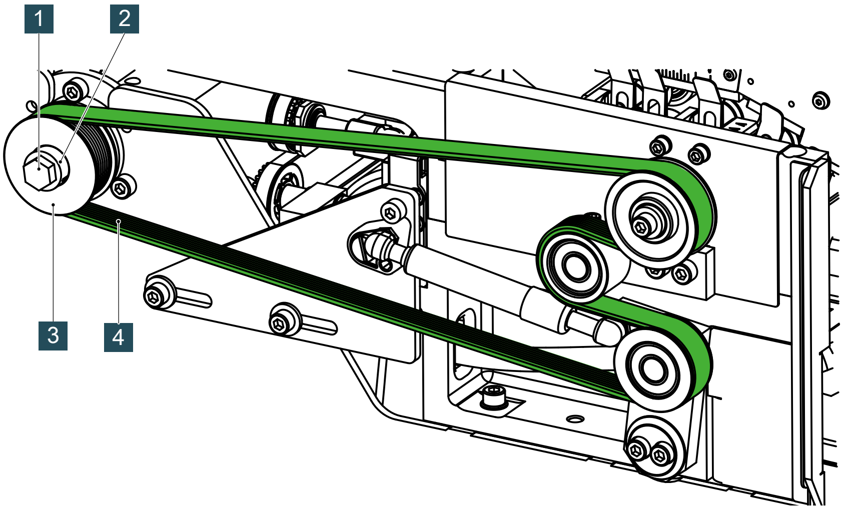


Figure 390: Pulley at position W4

3. Hold the pulley 3 with a hexagonal key against the lateral hole of the bearing shaft.
4. Loosen the screw 1 with a box wrench at the clamping sleeve 2.
5. Remove the pulley 3.

   ⇨ The pulley at the position W4 is removed.

Installing the Pulley at the Position W4

1. Put a new pulley to the correct position.
2. Hold the new pulley with a hexagonal key against the lateral hole of the bearing shaft.
3. Tighten the screw 1 with a tightening torque of 40 Nm at the clamping sleeve 2.
4. Install the belt 4 (*refer to* ▸ *594*).
5. Close the cover of break draft belt.

   ⇨ The pulley at position W4 is installed.

Result The pulley at position W4 is replaced.

7.7.30 Setting the Nipping Line Distance in the Drafting System

The nipping line distance has the main draft distance (HVD) and the break draft distance (VVD).

The nipping line distance is set in relation to:

- Commercial staple length (cotton)
- The components with the longest fibers and the mixing ratio (mixtures)
- Short fiber weight

– Fiber parallelism

For cotton, the fiber length is measured with different measuring devices. The HVI – SL 2.5 % value is most widely used in the spinning mill.

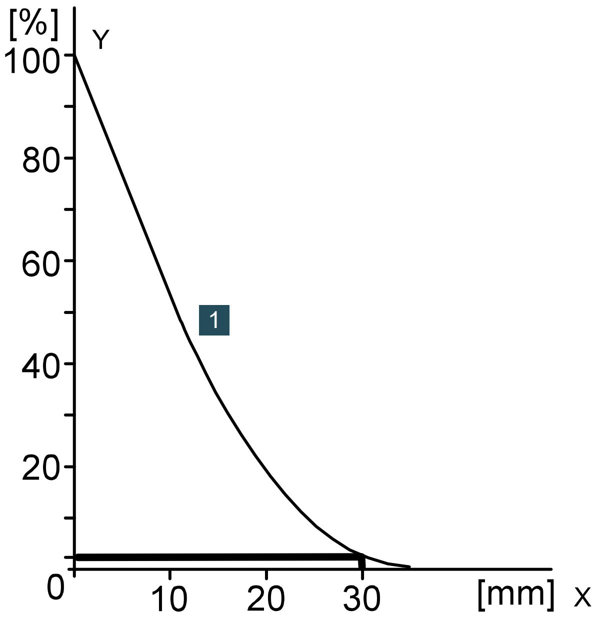


Figure 391: HVI fibrogram

X	Fiber length as span length in mm	Y	Fiber content in %
1	HVI 2.5 % span length		

The HVI is a measuring device that makes an analysis of combed and clamped cotton fiber bundles. The HVI fibrogram that is shown before shows a HVI span length value of 2.5 % (SL 2.5 %). The HVI 2.5 % span length value (SL 2.5 %) approximately agrees with the commercial staple.

The table that follows shows the information about all the measuring devices and all measured values of the commercial staple length.

Measuring Devices and Measured Values of the Commercial Staple Length

Measuring Device	Measured Value	Description
HVI	SL 2.5 %	2.5 % span length The fiber length is specified as the span length that extends by 2.5 % of the fibers.
	UHML	Upper Half Mean Length The average length of the upper 50 % of the fibers

Measuring Devices and Measured Values of the Commercial Staple Length		
Measuring Device	**Measured Value**	**Description**
AFIS-L	UQL(w)	Upper Quartile Length by Weight The fiber length in relation to the weight that is more than the fibers by 25 %.
Almeter	L(w) 25 %	Upper Quartile Length by Weight The fiber length in relation to the weight that is more than the fibers by 25 %.

7.7.30.1 Setting the Main Draft Distance (HVD)

The main draft distance HVD is set in the range from 37 -72 mm.

Make sure that the drafting system distances are correct through tests involving final spinning down to the yarn.

Raw Material	Main Draft Distance HVD (mm)
Combed CO	SL 2.5 % + (8 –10)

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

NOTICE

Drafting system distance too short!

Fiber damage because the drafting system distance is less than the defined lower limit.

▶ Do not set the drafting system distance less than the defined lower limit.

▶ If the main draft distance is set less than 37 mm, remove the web guide to prevent the collision with the pressure bar.

1. Refer to the table that is shown before to select the main draft distance.
2. Open the cover of break draft belt.
3. Loosen the belt 2 at the position W4 (*refer to ▶ 594*).

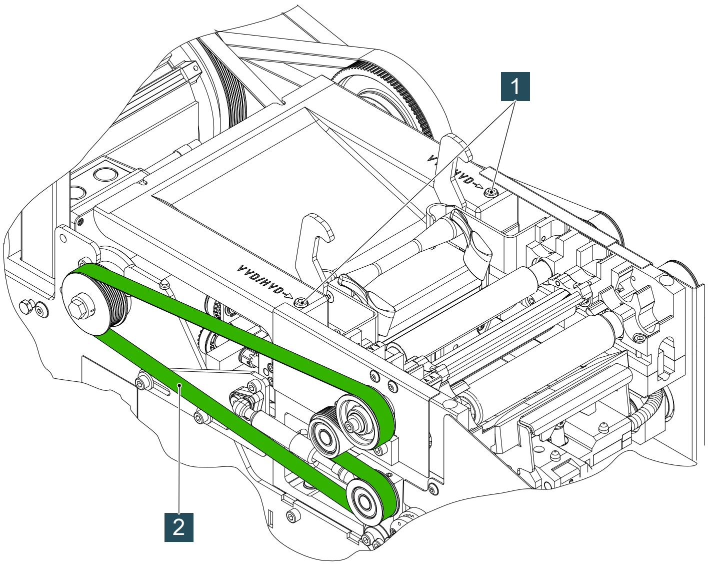


Figure 392: Cylinders of the drafting system

4. Loosen the screws 1 at the cover.
5. Put a hexagonal key through the hole 3 into the hole 5 along the axis 4.

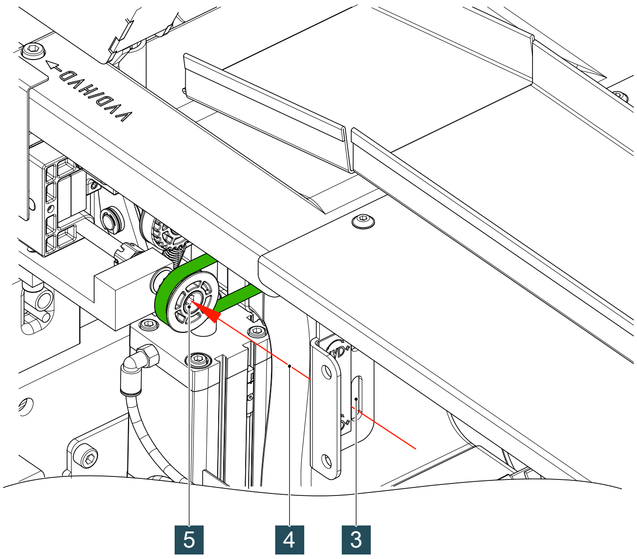


Figure 393: Setting device of the main draft

6. Turn the installed hexagonal key clockwise to increase the main draft distance.
7. Turn the installed hexagonal key counterclockwise to decrease the main draft distance.
8. Check if the bearing edge 7 points to the correct value on the scale 6.

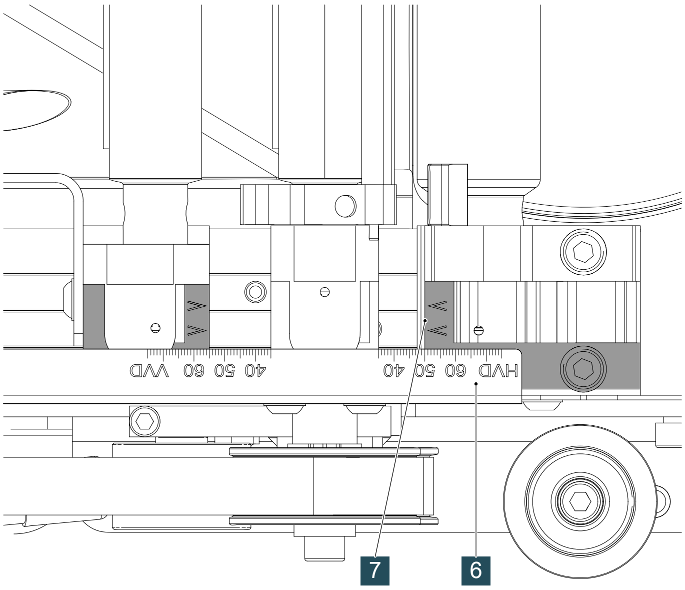


Figure 394: Setting device of the main draft

9. If the bearing edge does not point to the correct value, turn the hexagonal key again.
10. Remove the hexagonal key.
11. Tighten the screws 1 at the cover.
12. Apply tension to the belt 2 (*refer to* ▸ *594*).
13. Set the feed roller and the middle roller (*refer to* ▸ *339*).
14. Set the clearer lips of the top rollers.
15. Close the cover of break draft belt.

Result The main draft distance is set.

7.7.30.2 Setting the Break Draft Distance (VVD)

The break draft distance HVD is set in the range of 35 – 76 mm. A lower break draft is set for a larger break draft distance. A higher break draft is set for a smaller break draft distance.

The user must check the drafting system distances through tests involving final spinning down to the yarn.

The break draft distance is set in relation to:

- Fiber parallelism
- Drafting resistance
- Break draft height

Raw Material	Break Draft Distance VVD (mm)
Combed CO	SL 2.5 % + (10 –18)

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.

NOTICE

Drafting system distance too short!

Fiber damage because the drafting system distance is less than the defined lower limit.

- ▶ Do not set the drafting system distance less than the defined lower limit.
- ▶ If the main draft distance is set less than 37 mm, remove the web guide to prevent the collision with the pressure bar.

1. Select the break draft distance according to the table that is shown before.
2. Open the cover of main draft belt.
3. Release the tension from the belt 4 of the feed cylinder.

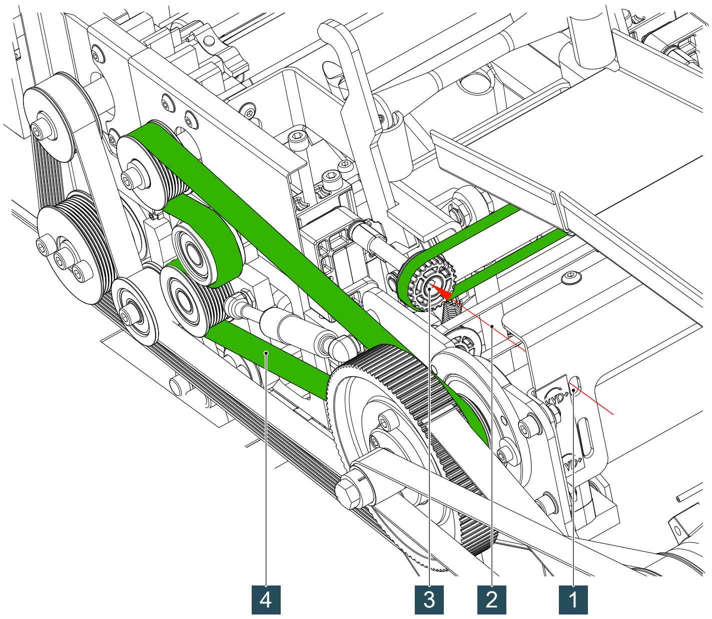


Figure 395: Setting device of the break draft

4. Loosen the screws 5 at the covers.

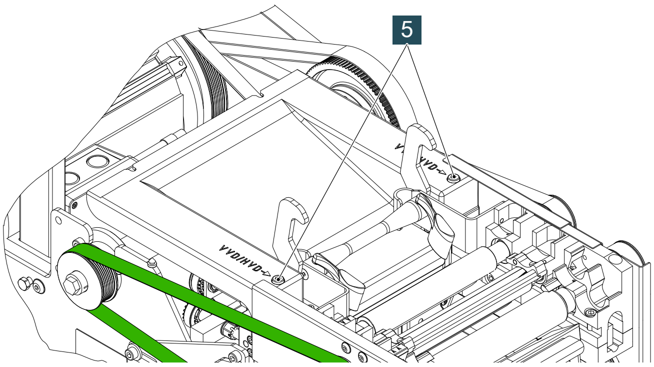


Figure 396: Drafting system cylinders

5. Put a hexagonal key through the hole 1 into the hole 3 along the axis 2.
6. Turn the installed hexagonal key clockwise to increase the break draft.
7. Turn the installed hexagonal key counterclockwise to decrease the break draft.
8. Check if the bearing edge 7 points to the correct value on the scale 6.

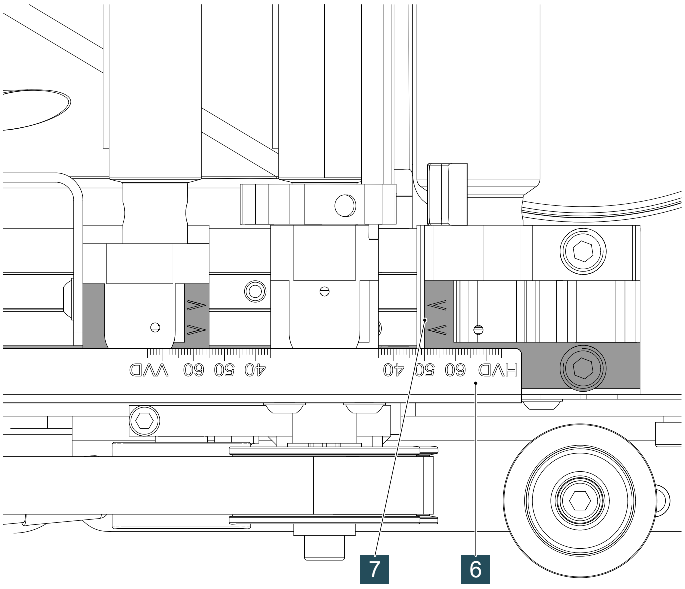


Figure 397: Setting device of the main draft

9. If the bearing edge does not point to the correct value, turn the hexagonal key again.
10. Remove the hexagonal key.
11. Tighten the screws 5 at the cover.
12. Apply tension to the belt 4.
13. Set the top roller of the feed cylinder.
14. Set the clearer lips of the top roller.

15. Close the right hood.

Result The break draft distance is set.

7.7.31 Adjusting the Positions of the Top Rollers

If the drafting system distance is changed, the positions of the related top rollers must be set.

The top delivery roller 5 and the deflection roller 6 are not adjustable.

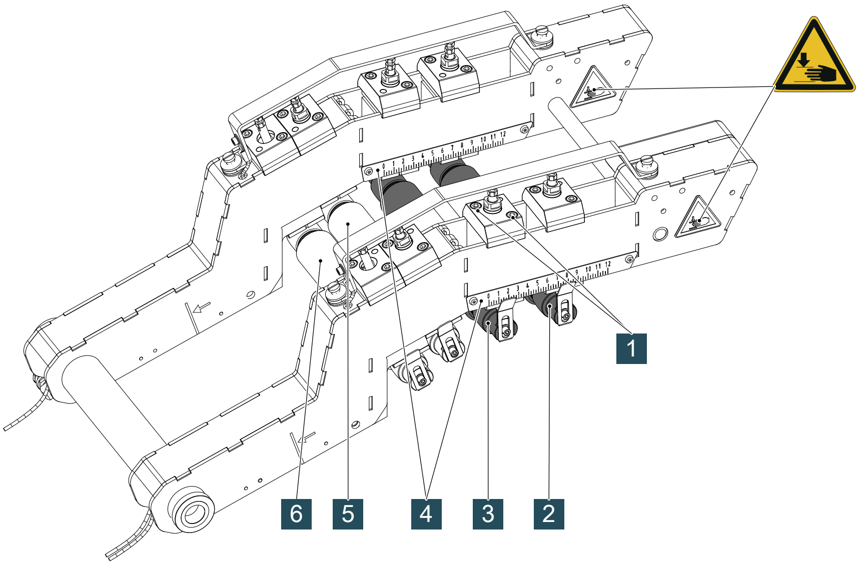


Figure 398: Loading arm of the drafting system

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The 2 scales on both sides of the loading arm are parallel.

CAUTION

Falling loading arm!

Risk of crushing the hands

▶ Do NOT put the hands below the loading arm when the loading arm becomes lowered.

1. Open the drafting system hood.
2. Move up the unlocked loading arm.
3. Loosen all the screws 1 at both sides of the top roller 3.
4. To align the center line 9 of the roller screw with the center line 9 of the bearing block 7, adjust the top roller 3.

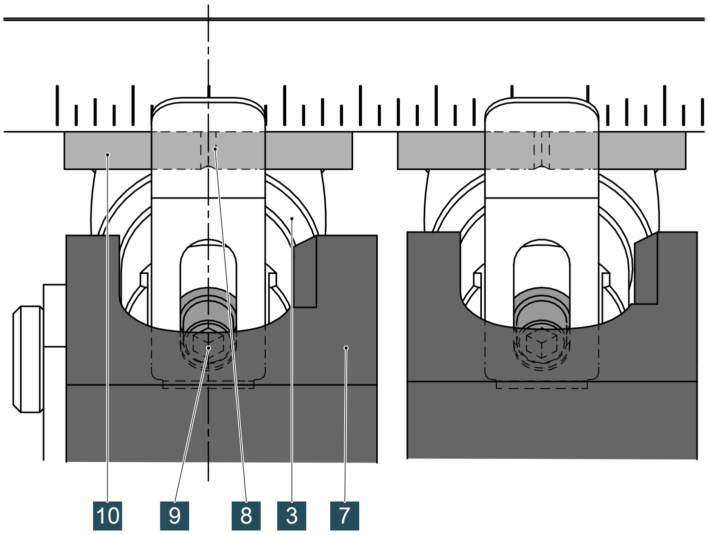


Figure 399: Top roller at the bearing block

5. To align the center line 9 of the groove 8 with the center line 9 of the roller screw, adjust the groove 8 of the loading element 10.
6. Do the steps 4 and 5 for the other side of the feed top roller 3.
7. Make sure that the grooves 8 on both sides point to the same value on the 2 scales 4.
8. If the grooves 8 do not point to the same value on the 2 scales 4, do the steps 4 – 6 again.
9. Tighten the screws 1 at both sides of the top roller 3.
10. Adjust the position of the top roller 2 in the same procedure of steps 3 – 9.
11. **CAUTION! Falling loading arm! Risk of crushing the hands.** Move down the loading arm.
12. Close the drafting system hood.

Result The positions of the top rollers are set.

7.7.32 Setting the Mechanical Drafting System Load

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Open the drafting system hood.
2. Loosen the countersunk screws 3.

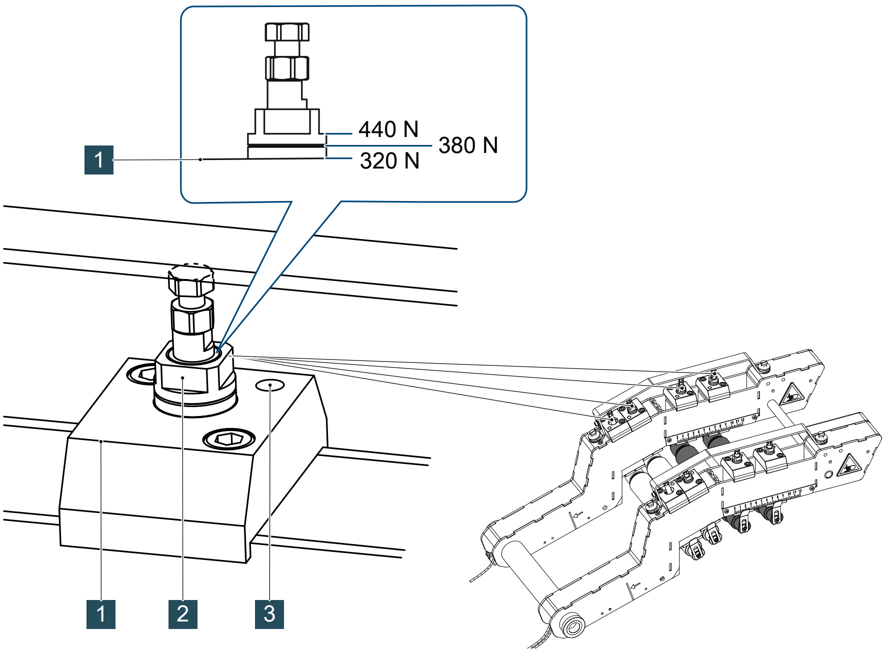


Figure 400: Loading element of the drafting system

3. To see the edges of the bushing 2 with that different loads are possible to be applied to the roller, refer to the figure that is shown before.
4. Turn the bushing 2 until the necessary edge of the bushing 2 is aligned with the edge 1 of the loading element.
5. To align the same edge of the bushing 2 with the edge of the loading element 1, turn the bushing 2 on the other side of the roller.
6. Tighten the countersunk screws 3.
7. Close the drafting system hood.

Result The drafting system load is set.

7.7.33 Adjusting the Web Guides on the Delivery Cylinder

The web guides prevent that air moves out at the sides of the delivery cylinder. Thus, the fibers do not move from the delivery cylinder. If the main draft distance is set to less than 37 mm for short fibers, the web guides are not to be used to prevent a collision between the web guides and the pressure bar.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.

⚠ **CAUTION**

Falling loading arm!

Risk of crushing the hands

- ▶ Do NOT put the hands below the loading arm when the loading arm becomes lowered.

1. Open the drafting system hood.
2. Lift the unlocked loading arm.
3. Loosen the threaded pin 2.

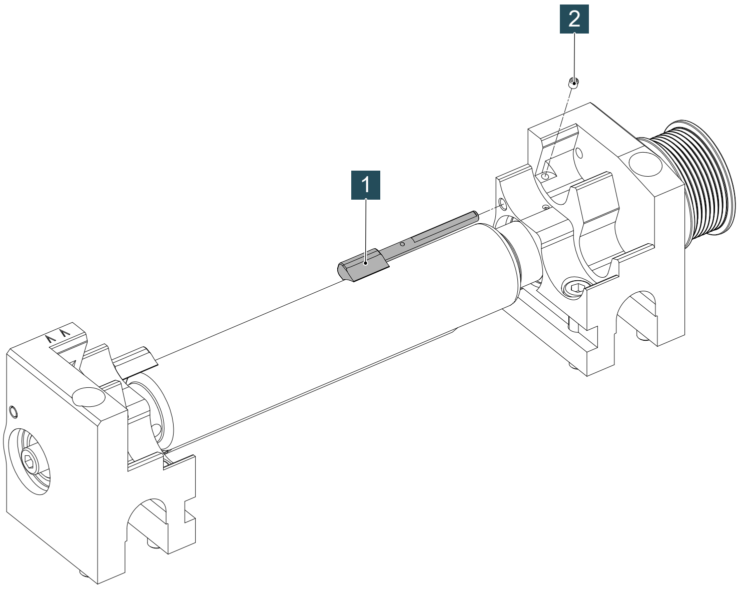


Figure 401: Web guide at the delivery cylinder

4. Remove the web guide 1.
5. Check if the web guides touch the web.
6. If the web guides touch the web, set the web guides.
7. Tighten the threaded pin 2.
8. Check if the web guide touches the delivery cylinder, the top roller, and the pressure bar.
9. If the web guides touch the delivery cylinder, the top roller, or the pressure bar, adjust the web guides.
10. **CAUTION! Falling loading arm! Risk of crushing the hands.** Move down the loading arm.
11. Close the drafting system hood.
12. Start the machine for a few seconds.
13. Check if the web guides touch the web.

Result The web guides on the delivery cylinder are adjusted.

7.7.34 Adjusting the Web Funnel

Prerequisites Make sure that the criteria are obeyed:

✓ The pins **2** at the bearing saddle do not extend out.

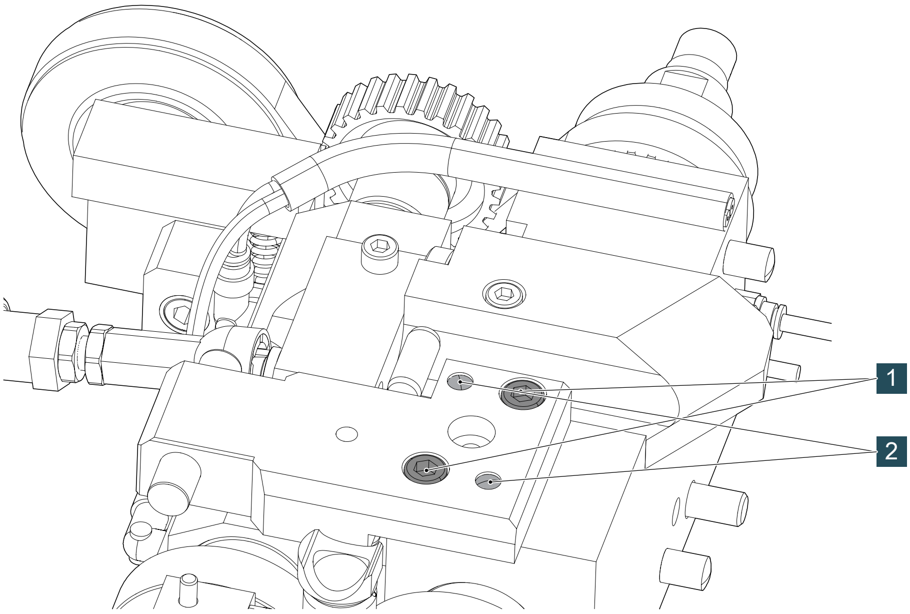


Figure 402: Bearing saddle

✓ The screws **1** at the bearing saddle are tightened.

✓ The 2 pins **7** at the web funnel holder **4** touch the 2 surfaces **6** of the swivel plate.

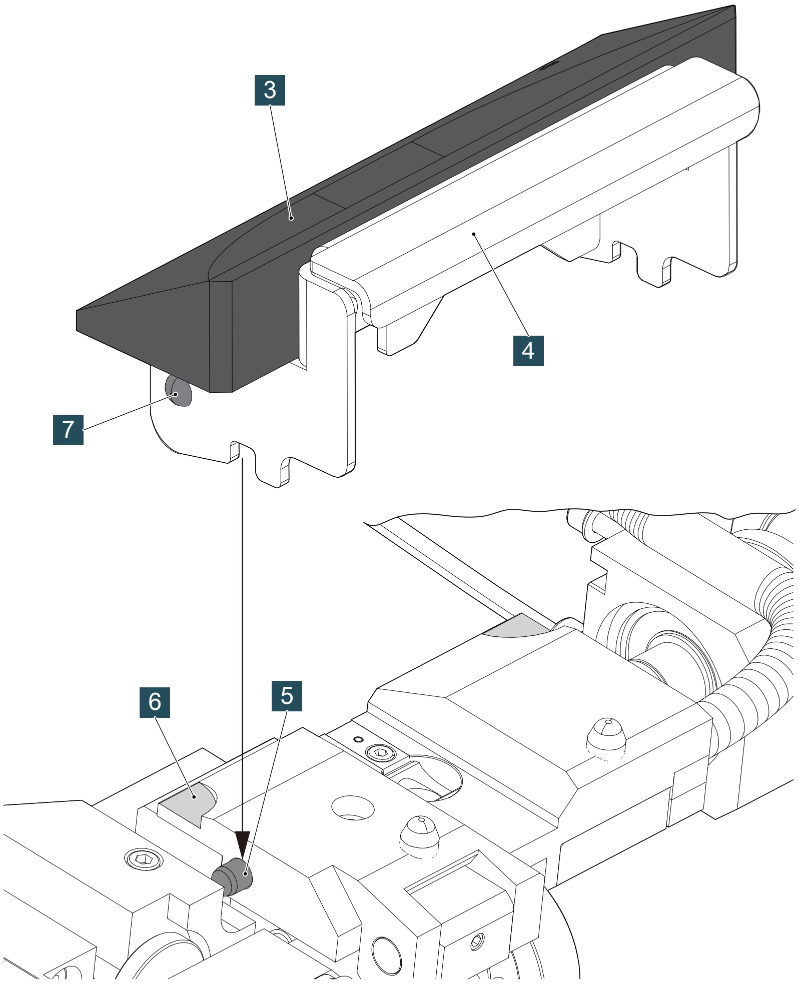


Figure 403: Web funnel setting

- ✓ The 2 pins 5 at the swivel plate are in the 2 slots of the web funnel holder 4.
- ✓ The web funnel insert 11 align with the sliver funnel 10.

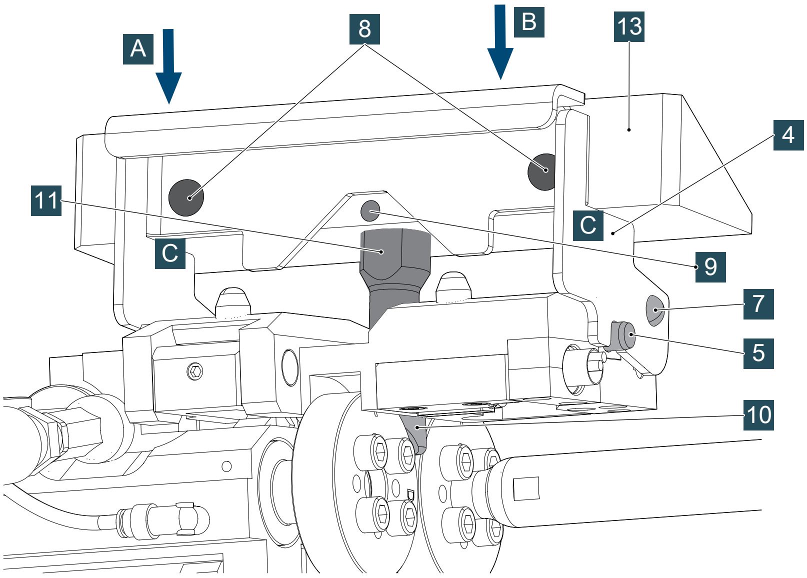


Figure 404: Web funnel setting

1. To make sure that the flat surface of the web funnel insert 11 is parallel to the web funnel surface 13 and the threaded pin is tightened, examine the web funnel insert 11.
2. Loosen the screws 8.
3. To make sure that the web funnel holder 4 is stable on the pins 5 and 7, push down the web funnel holder 4 with the fingers at the positions A and B
4. If the web funnel holder 4 tilts too much, adjust the web funnel holder 4.
5. Push down the web funnel holder 4 at the positions A and B with the fingers and tighten the screws 8 at the same time.
6. Remove the web funnel holder 4 with the web funnel 3 and the web funnel insert 11.
7. To make sure that the clearance between the web funnel 3 and the web funnel holder 4 is the same at both sides C, examine the clearance.
8. If the clearance is not the same at both sides C, add the clearance value at 1 side C to the clearance value at the other side C and divide the total value by 2.
9. Set the clearances at both sides C to the value that is calculated in the last step.
10. To make sure that the web funnel 3, the web funnel holder 4, and the web funnel insert 11 are attached tightly, examine these 3 parts.
11. Install the web funnel holder 4 with the web funnel 3 and the web funnel insert 11.

12. To make sure that the web funnel 3, the web funnel holder 4, and the web funnel insert 11 do not tilt too much, examine the 3 parts.
13. Move down the loading arm.
14. Turn the rotary switch to the right position **II** and release it after a short time.
    ⇨ The loading arm applies the load.
15. To make sure that the web funnel 3 and the top roller 12 do not touch each other, examine the 2 parts.

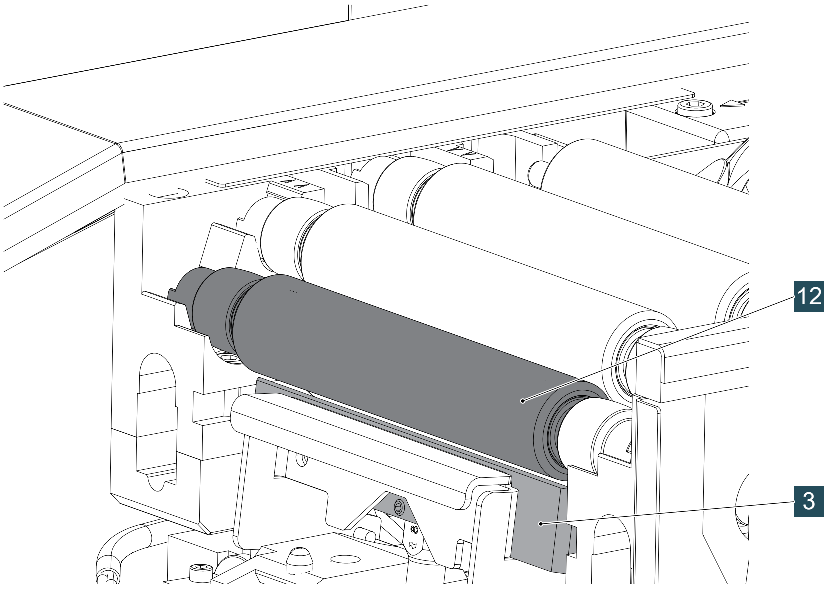


Figure 405: Top rollers

Result The web funnel is adjusted.

7.7.35 Adjusting the Web Funnel Insert

The web funnel insert is selected in accordance with the raw material and the delivered sliver weight.

Web Funnel Insert for 3.5 to 7.0 ktex				
Raw Material	Delivered Sliver Weight (ktex)			
	3.5 – 3.7	3.7 – 5.2	5.2 – 5.8	5.8 – 7.0
Combed CO	7	8	8 (10)	10
The values are given in millimeters. The values in parentheses are permitted on an unusual basis.				

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The raw material is given.

⚠ CAUTION

Falling loading arm!

Risk of crushing the hands

- ▶ Do NOT put the hands below the loading arm when the loading arm becomes lowered.

1. Open the drafting system hood.
2. Move up the unlocked loading arm.
3. Move the web funnel 1 forward.
4. Remove the web funnel 1.

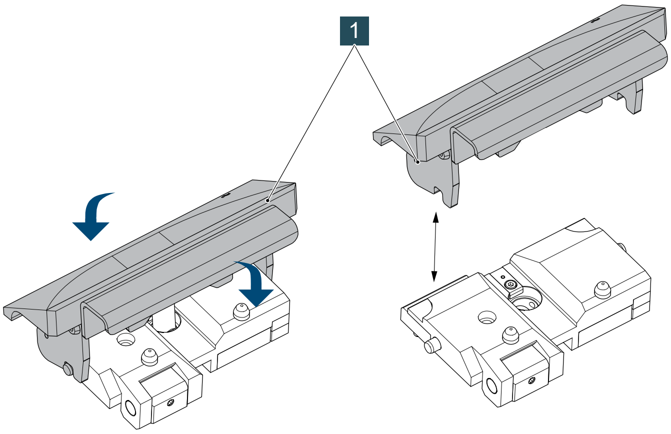


Figure 406: Web funnel

5. Loosen the screws 2 at the web funnel insert 3 with the hexagonal key.

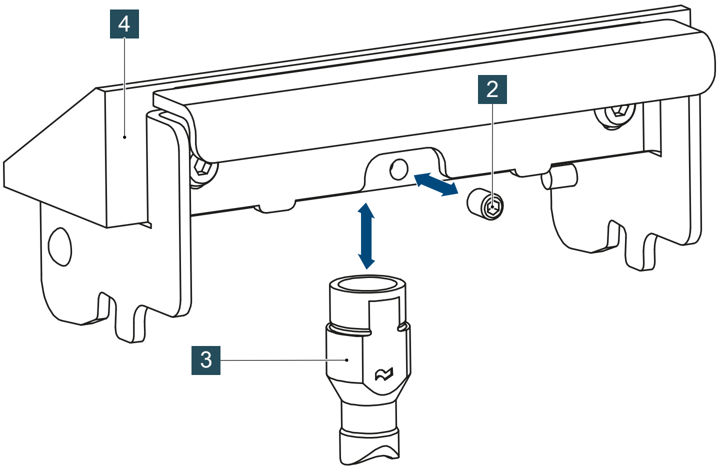


Figure 407: Web funnel insert

6. Remove the web funnel insert 3 from the bottom side.
7. Install the new web funnel insert 3 carefully from the bottom side.

8. Set the web funnel insert 3 to make the flat surface parallel to the web funnel surface 4.
9. Tighten the screw 2 at the web funnel insert 3 with a hexagonal key.
10. Install the web funnel 1.
11. Move the web funnel 1 backward.
12. Check the web funnel 1.
13. **CAUTION! Falling loading arm! Risk of crushing the hands.** Move down the loading arm.
14. Close the drafting system hood.

Result The web funnel is set adjusted.

7.7.36 Adjusting the Sliver Funnel

The sliver funnel is selected in accordance with the raw material and the delivered sliver weight.

Sliver Funnel for 3.5 to 7.0 ktex						
Raw Material	**Delivered Sliver Weight (ktex)**					
	3.5 – 3.7	**3.7 – 4.0**	**4.0 – 4.3**	**4.3 – 5.2**	**5.2 – 5.8**	**5.8 – 7.0**
Combed CO	3.2	3.2 (3.5)	3.5 (3.8)	3.8 (4.2)	4.2 (4.6)	4.6 (5.0)
The values are given in millimeters. The values in parentheses are permitted on an unusual basis.						

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

⚠ **CAUTION**

Falling loading arm!

Risk of crushing the hands

▶ Do NOT put the hands below the loading arm when the loading arm becomes lowered.

1. Open the drafting system hood.
2. Lift the unlocked loading arm.
3. Move the web funnel 1 forward.
4. Remove the web funnel 1.

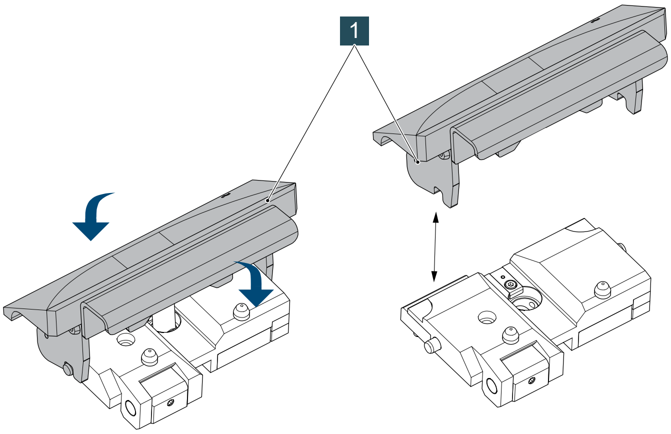


Figure 408: Web funnel

5. Lift the sliver funnel 4.
6. Remove the sliver funnel 4.

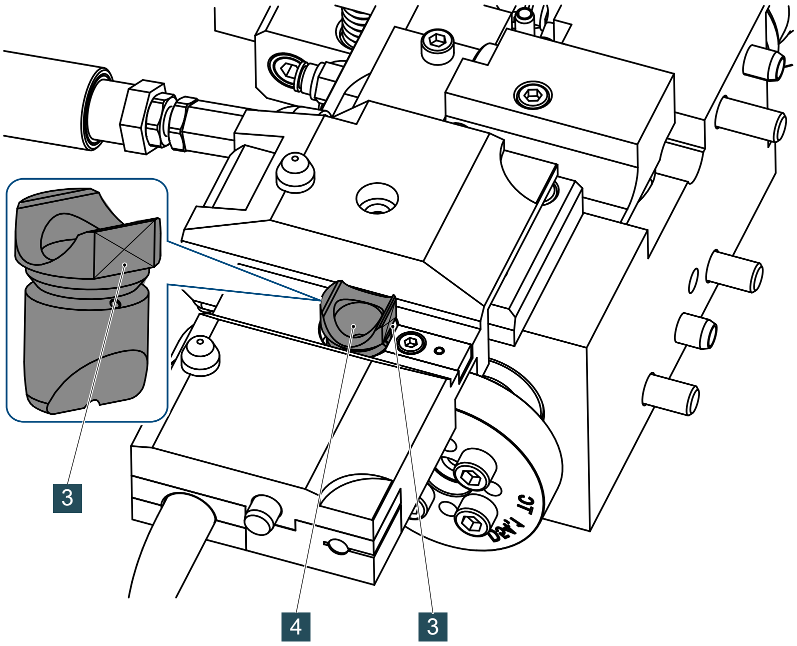


Figure 409: Sliver funnel

7. Install the new sliver funnel 4 from the top.
8. Make sure that the plane 3 is installed at the correct position.
9. Push down the new sliver funnel 4.
10. To make the bracket of the web funnel 1 stay on the pins 2 of the swivel plate, install the web funnel 1.
11. Push down the web funnel 1.

12. **CAUTION! Falling loading arm! Risk of crushing the hands.** Move down the loading arm.
13. Close the drafting system hood.

Result The sliver funnel is adjusted.

7.7.37 Setting the Delivery Disk Load

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

⚠ **CAUTION**

Falling loading arm!

Risk of crushing the hands

▶ Do NOT put the hands below the loading arm when the loading arm becomes lowered.

1. Lift the unlocked loading arm.
2. Remove the cotton from the machine fully.
3. Turn the calender locking lever 2 clockwise.

   ⇨ The delivery disks 1 are loaded.

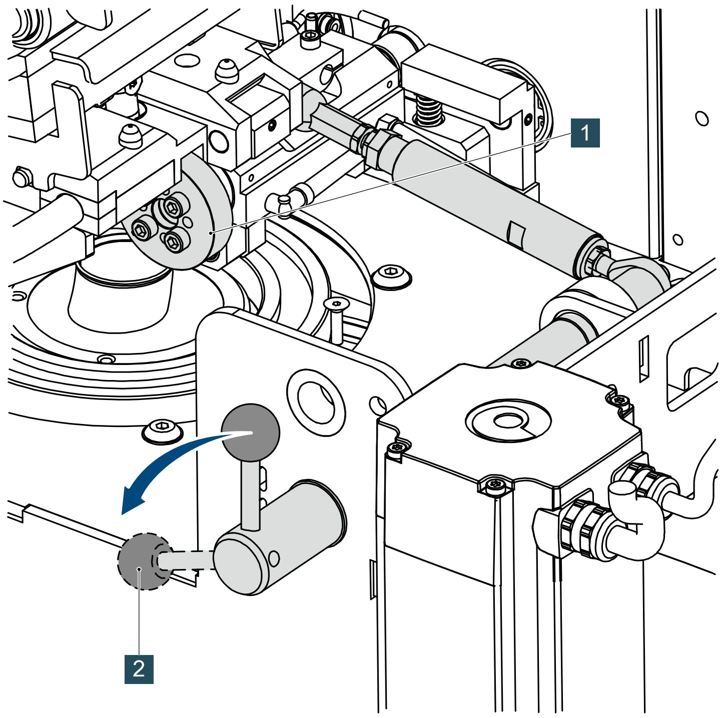


Figure 410: Loaded delivery disks

4. Loosen the lock nut 4.

5. Set the distance X to 16 mm with the nut 3.

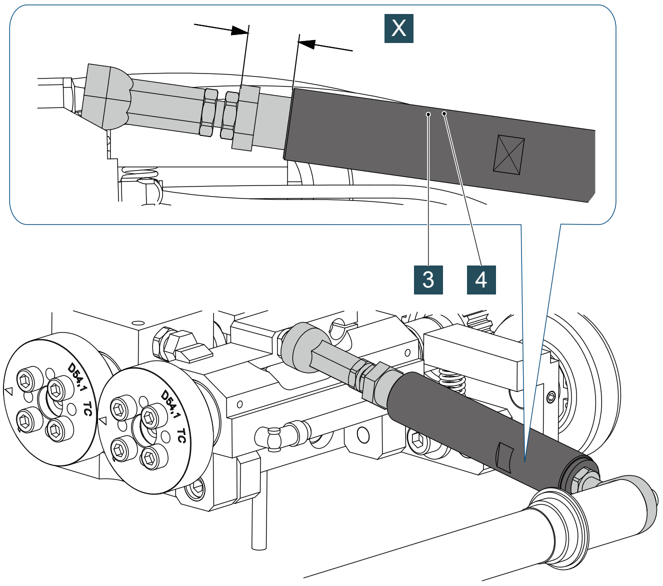


Figure 411: Distance setting

⇨ The delivery disk load is 320 N.

6. Tighten the lock nut 4.
7. **CAUTION! Falling loading arm! Risk of crushing the hands.** Move down the loading arm.
8. Close the drafting system hood.

Result The delivery disk load is set.

7.8 Preparation without Raw Material

This section contains the instructions to prepare the machine for the production without raw material.

7.8.1 Sensors

This section contains the information about how to set the sensors.

7.8.1.1 Aligning the Light Barrier for Tube Monitoring (with ROBOlap)

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Remove all tubes 2.

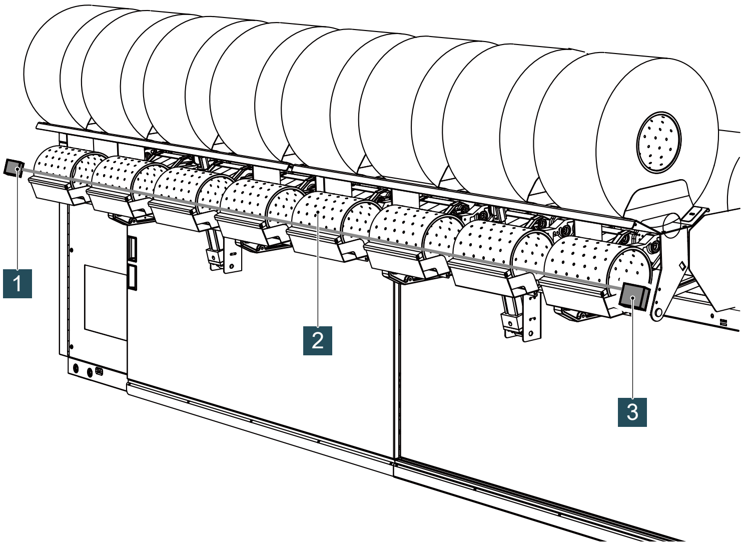


Figure 412: Light barrier for tube monitoring

2. Align the transmitter 1 and the receiver 3 until the LED comes on.
3. Put the tubes at the correct position.

   ⇨ The LED is off.

Result The light barrier for tube monitoring is aligned.

7.8.1.2 Aligning the Light Barriers of the Fly Duct

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Clean the machine.
2. Make sure that the light beam is not interrupted by fluff.
3. Align the transmitter 2 and the receiver 1 until the LED comes on.

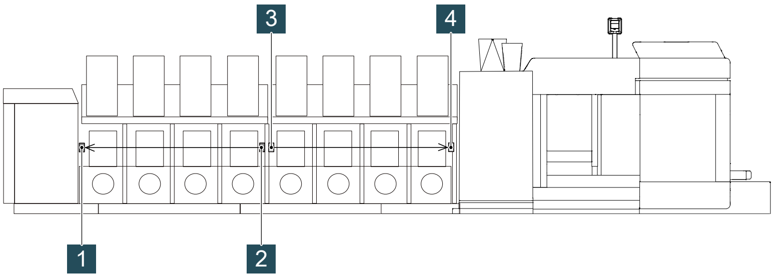


Figure 413: Light barriers

4. Align the transmitter 3 and the receiver 4 until the LED comes on.

Result The light barriers of the fly duct are aligned.

7.8.1.3 Setting the Sliver Monitoring Devices

The machine has different names for the 8 sliver monitoring devices.

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. To simulate the pulling force of the sliver, put an applicable weight onto the funnel table 1.

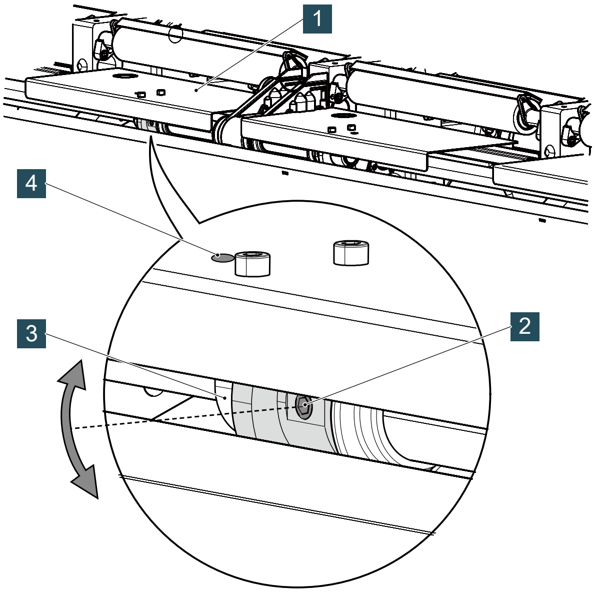


Figure 414: Funnel table

2. Loosen the screw 2.
3. Lift and lower the setting collar 3.

   ⇨ The condition of the LED 4 changes.
4. When the LED 4 changes to green, tighten the screw 2.

   ⇨ The center position of the draw-off table is set.
5. Make sure that the LED changes to red when the draw-off table is not in the center position.
6. Set the other 7 sliver monitoring devices in the same procedure with the steps 1 - 5.

Result The sliver monitoring devices are set.

7.8.1.4 Setting the SERVOtrolley Proximity Switches

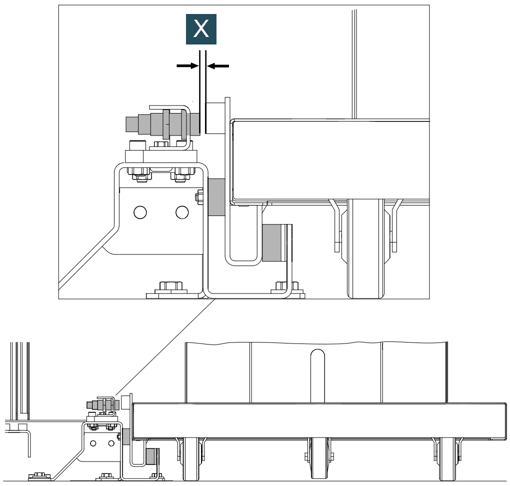


Figure 415: Distance between the proximity switches

1. Set the distance X between the proximity switches to 4 – 5 mm.
2. To make the proximity switches on, push the lap trolleys into the comber.

Result The SERVOtrolley proximity switches are set.

7.8.1.5 Setting the Stop Position of the Proximity Switch of the Coiler

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Turn the coiler to the correct position.
2. Make sure that the cam 2 points to the proximity switch 3.

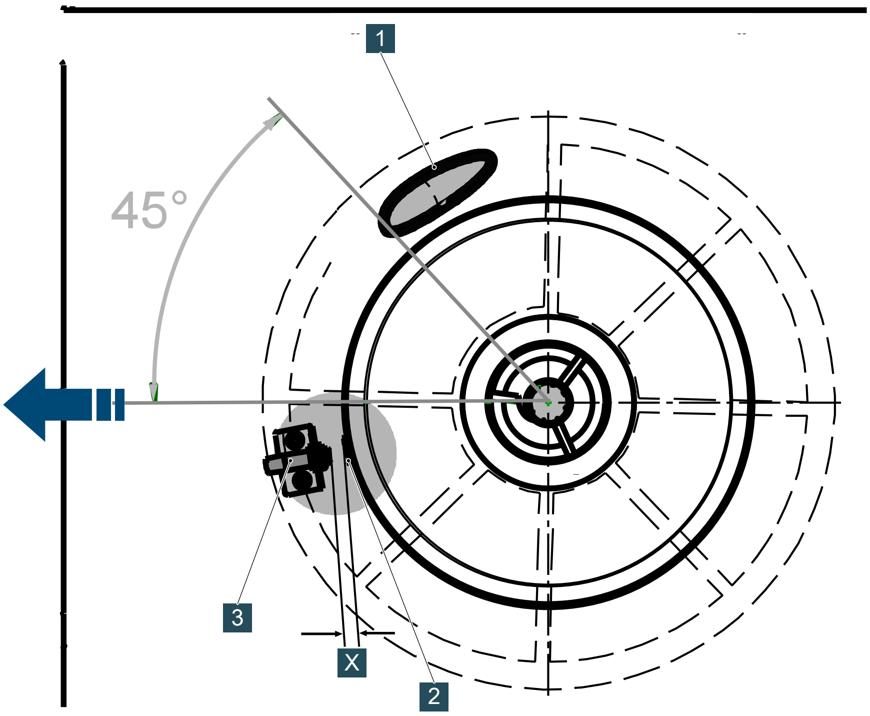


Figure 416: Coiler (CD 600 mm)

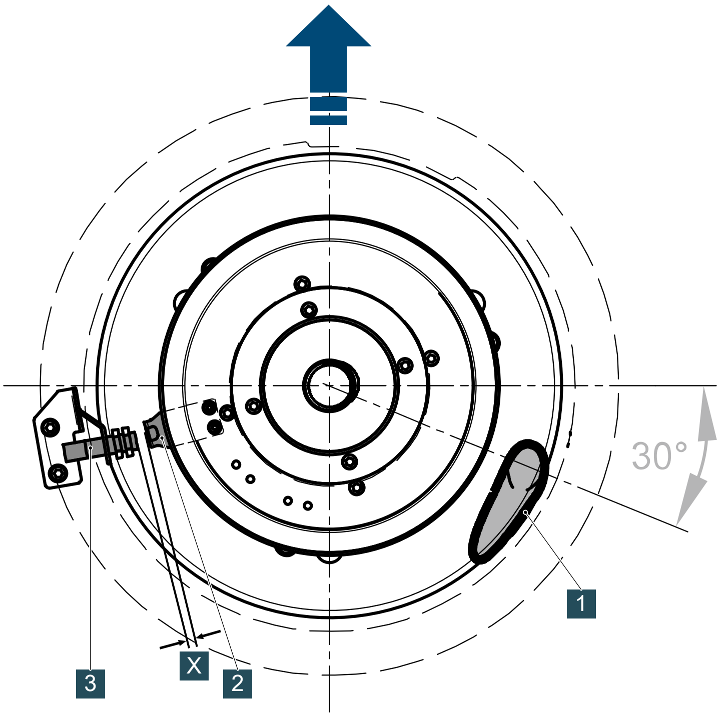


Figure 417: Coiler (CD 1000 / 1200)

3. Set the proximity switch 3 with the lock nuts.

4. Make sure that the distance X between the proximity switch 3 and the cam 2 is 2 mm.
5. Make sure that the status indicator of the proximity switch shows green on the data screen 7.1.4.1 **Delivery 1**.
6. Identify the position of the lower opening of the sliver duct 1.

Result The stop position of the proximity switch of the coiler is set.

7.8.1.6 Setting the Magnetic Switch

Prerequisites Make sure that the criteria are obeyed:

- ✓ The end position damping is set.

1. Move the piston 1 to the correct position as shown at the position A in the figure.

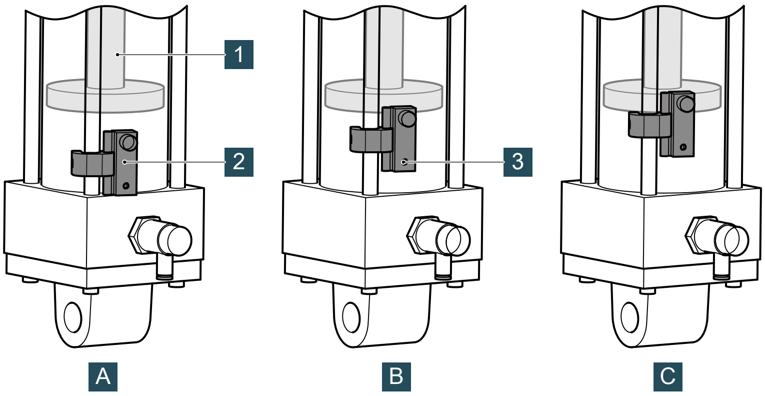


Figure 418: Magnetic switch

2. Move the magnetic switch 2 to the piston 1 until the LED 3 comes on as shown at the position B in the figure.
3. Move the magnetic switch 2 2 mm higher as shown at the position C in the figure.
4. Install the magnetic switch 2.

Result The magnetic switch is set.

7.8.1.7 Setting the Safety Distance Between the Delivery Disks

If the distance between the 2 delivery disks is less than 0.15 mm, this procedure is to be done again.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ 1 feeler gauge of 0.05 mm is to be used.
- ✓ 1 feeler gauge of 0.1 mm is to be used.
- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The drafting system hood is open.

- ✓ The loading arm is open.

1. Turn the web funnel with the holder 1.
2. Remove the web funnel with the holder 1.

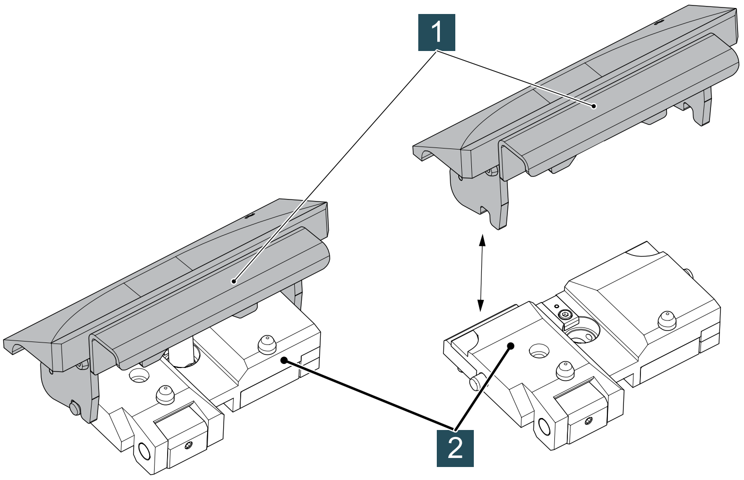


Figure 419: Web funnel

3. Turn up the swivel plate 2.

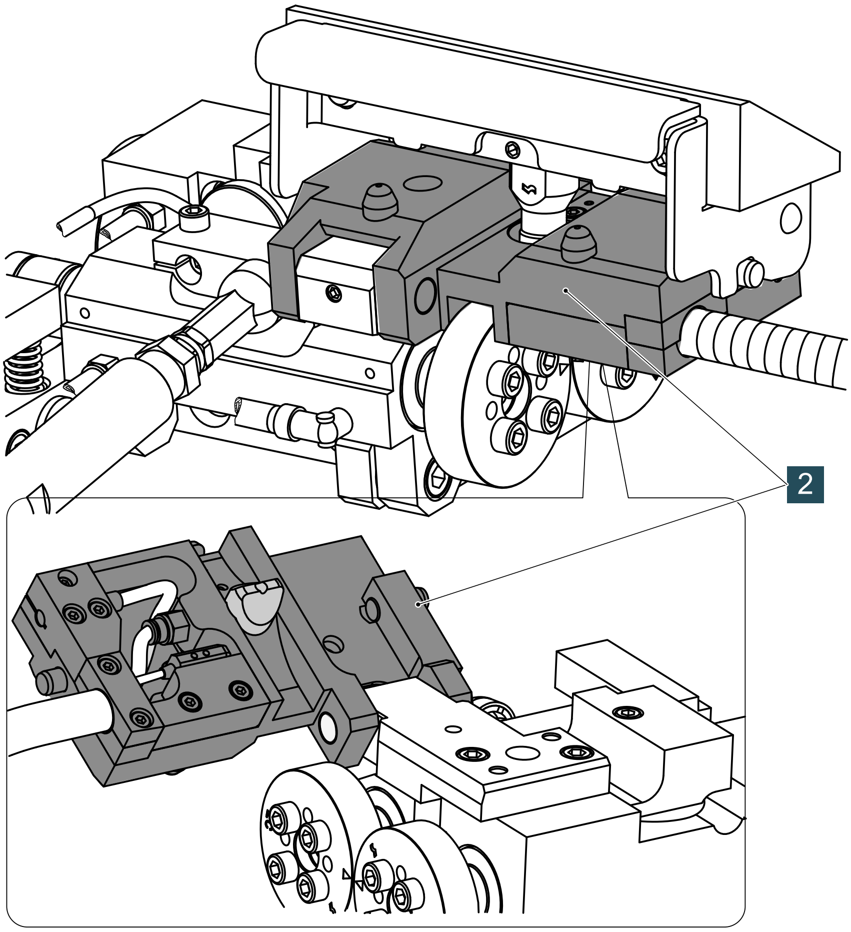


Figure 420: Safety distance setting between the delivery disks

4. To apply load to the delivery disks 3, turn the locking lever 4 counterclockwise.

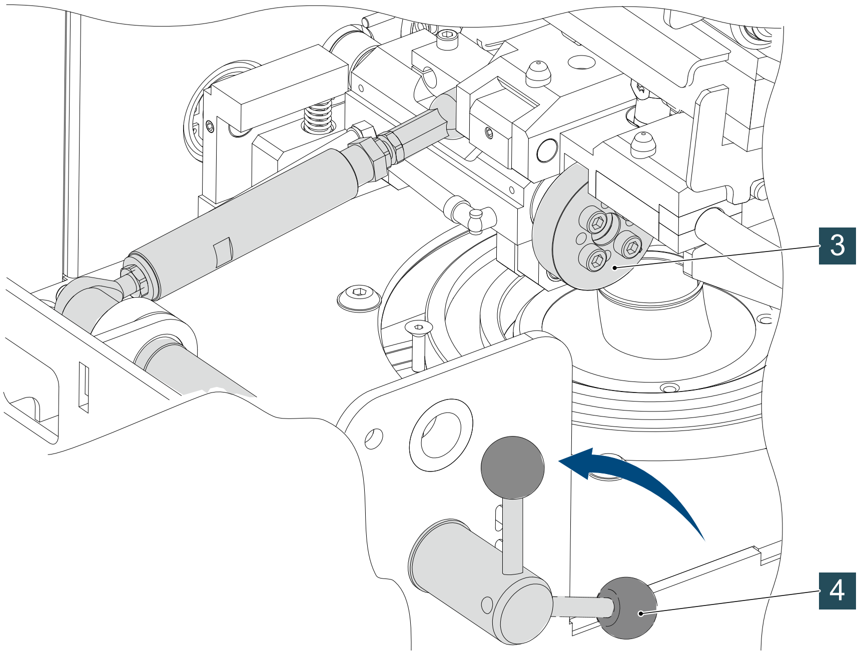


Figure 421: Safety distance setting between the delivery disks

5. To make a feeler gauge of 0.15 mm 8, put the 0.05 mm feeler gauge and the 0.1 mm feeler gauge together.

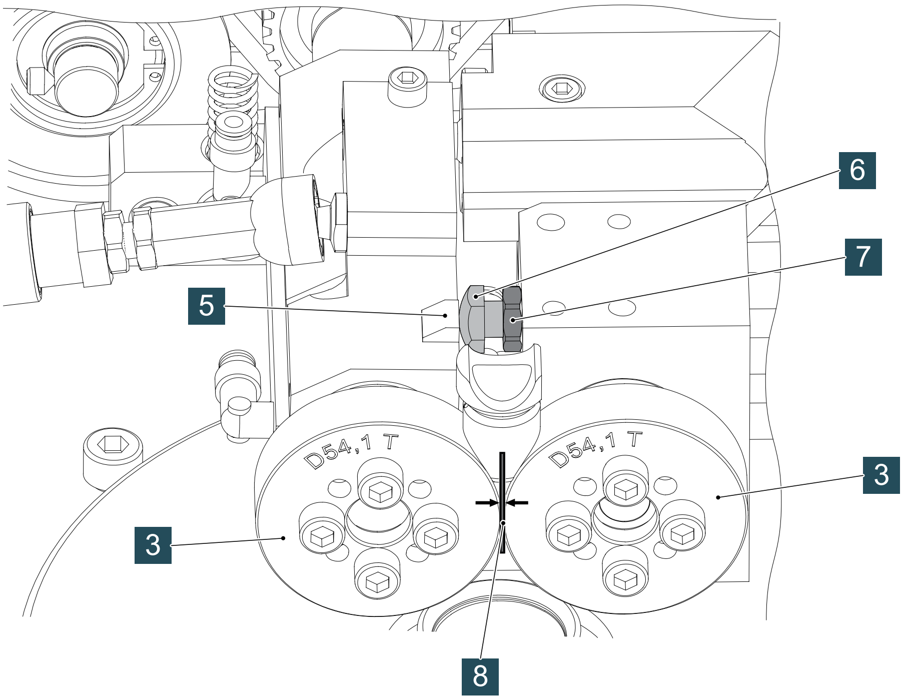


Figure 422: Safety distance setting between the delivery disks

6. Put the feeler gauge of 0.15 mm 8 between the delivery disks 3.
7. To make the screw 6 touch the calender roller bearing 5, turn the screw 6.
   ⇨ The feeler gauge of 0.15 mm 8 is to be removed easily.
8. Tighten the nut 7.
9. Remove the feeler gauge of 0.15 mm 8 from the delivery disks 3.
10. Turn down the swivel plate 2.
11. Install the web funnel with the holder 1.
12. Turn the web funnel rearward with the holder 1.

Result The safety distance between the delivery disks is set.

7.8.1.8 Setting the RQM/Quality Standard Sensor

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine stops after the stop button is pushed.
- ✓ The safety distance between the delivery disks is set (*refer to ▸ 356*).
- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The loading arm is open.
- ✓ The locking lever is locked.

1. Turn the web funnel with the holder 1.
2. Remove the web funnel with the holder 1.

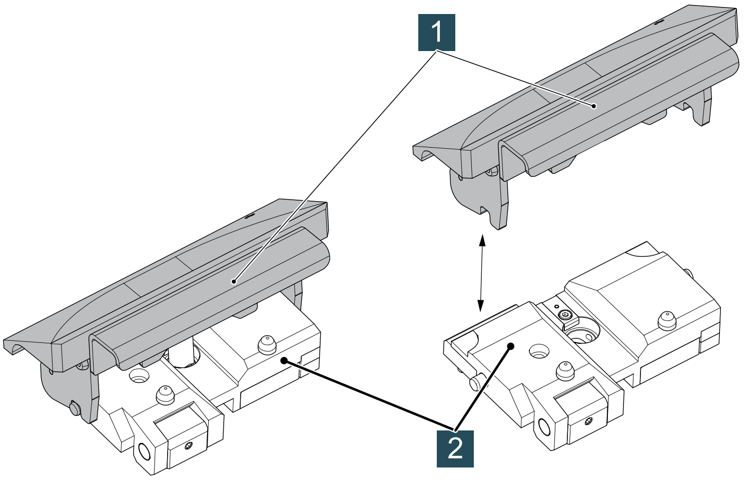


Figure 423: Web funnel

3. Turn up the swivel plate 2.
4. Loosen the screw 4.

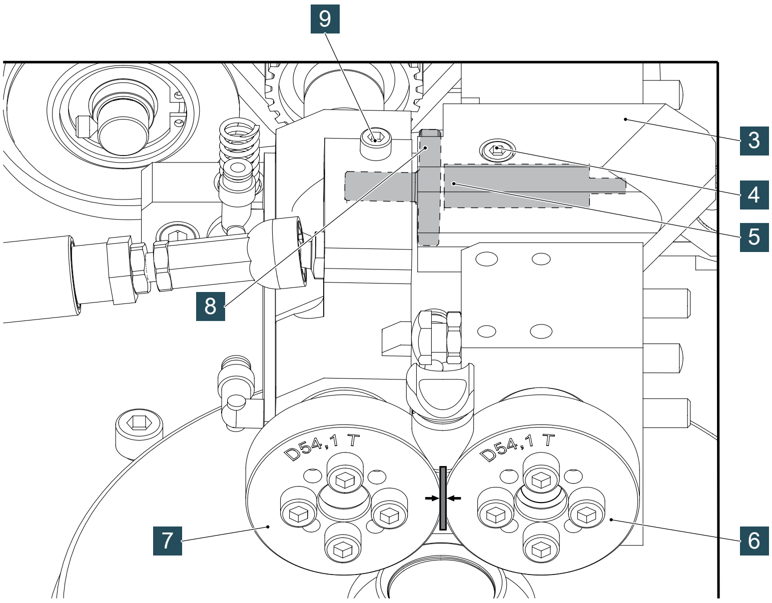


Figure 424: RQM/quality standard sensor

5. Push the sensor 5 out of the holder 3 toward the contact disk 8.
6. Loosen the screw 9.
7. Push the contact disk 8 toward the sensor 5 with the hexagonal key.

   ⇨ The sensor 5 is flush with the holder 3.
8. Tighten the screw 5.
9. Turn the contact disk 8 rearward by 4 turns.
10. Tighten the screw 9.
11. Calibrate the delivery disks 6 and 7 (*refer to* ▸ *362*).

Result The RQM/quality standard sensor is set.

7.8.1.9 Doing the Initialization of the RQM Sensor

When the initialization of the RQM sensor is done, the specified values in the data screen 2.1.2 **Values**, 2.4.1 A %, and 2.4.2 **Thick places** are changed to the factory settings. All values are to be set again.

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is in the service mode.

1. Go to the data screen 7.3.2 **Quality**.
2. Tap the key **Start wizard** in the field **RQM initialization**

Result The initialization of the RQM sensor is done.

7.8.1.10 Calibrating the Delivery Disks

When the machine is installed for the first time or the mechanics are changed, the delivery disks are necessary to be calibrated.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The safety distance between the delivery disks is set (*refer to ▸ 356*).
- ✓ The RQM/standard quality sensor is set (*refer to ▸ 360*).
- ✓ The machine is in the service mode.
- ✓ A 0.3 mm feeler gauge is to be used. (standard quality sensor)
- ✓ A 0.6 mm feeler gauge is to be used. (standard quality sensor and RQM)
- ✓ A 1.0 mm feeler gauge is to be used. (standard quality sensor)

1. Go to the data screen 7.3.2 **Quality**.
2. Tap the key **Start wizard** in the field **Delivery disk calibration**.
   ⇨ The instructions about how to calibrate the delivery disk are shown.
3. Calibrate the delivery disks in accordance with the instructions.

Result The delivery disks are calibrated.

7.8.2 ROBOlap

This section contains the information about the settings of the ROBOlap.

7.8.2.1 Setting the Pressure Lever

Prerequisites Make sure that the criteria are obeyed:

- ✓ The extension speed and the retraction speed of the pneumatic cylinder are set.
- ✓ The end position damping of the pneumatic cylinder is set.
- ✓ The magnetic switch is set.
- ✓ The machine is at a standstill.

1. Select the operating mode **Service** in the advanced display.
2. To retract the pneumatic cylinder 3, tap the key **Lift** in the field **Pressure roller** in the data screen 7.1.7.1 ROBOlap 1.

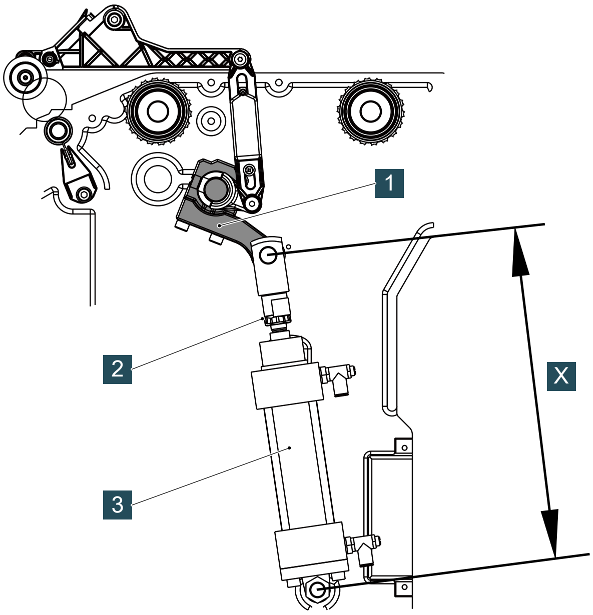


Figure 425: Pneumatic cylinder

3. Set the distance X at the fork head 2. (distance X: 349 – 351 mm)
4. If it is not possible to set the distance X, release the lever 1 and tighten the lever in the correct position.
5. Install the 8 pressure rollers 4.

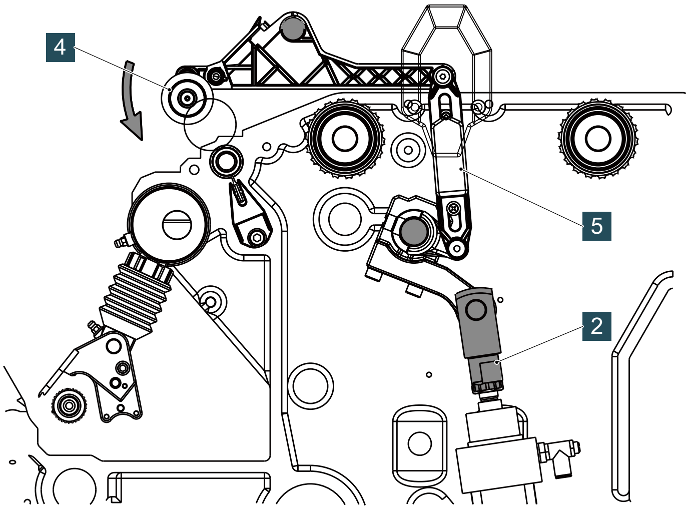


Figure 426: Pressure roller

6. To lower the pressure roller 4, tap the key **Lower** at **Pressure roller** in the data screen 7.1.7.1 ROBOlap 1.

   ⇨ Tension is applied to the pressure lever package 5.
7. Do a check of the tension on all combing units.

8. If the screw is out of the area Y, set the tension at the fork head 2.

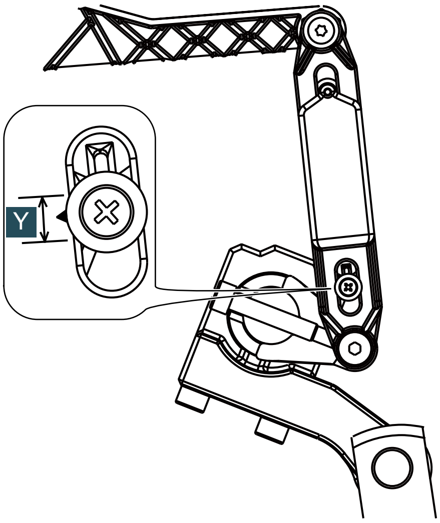


Figure 427: Fork head

Result The pressure lever is set.

7.8.2.2 Setting the Air-Jet Pipe

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ The screwdriver is to be used.

1. Put the air-jet pipe 5 through the holder 2 to the black clip 4.

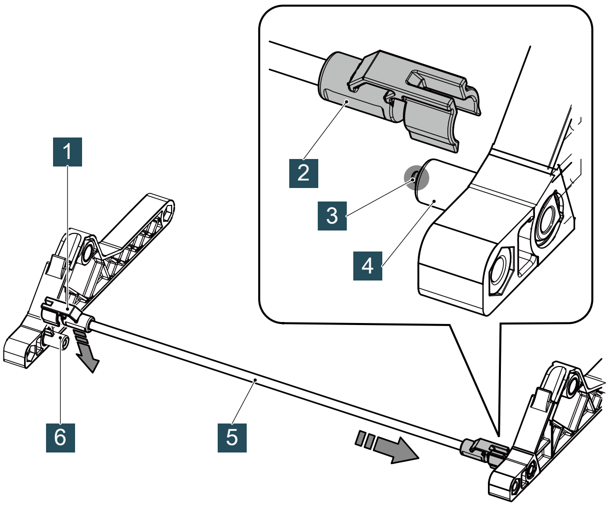


Figure 428: Air-jet pipe

2. Push the air-jet pipe 5 to the right side and hold the air-jet pipe.
   ⇨ The spring pin 3 is pushed in.
3. Install the white clip 1 on the holder 6.

4. Do a check of the clearance of the air-jet pipe 5.
5. If the air-jet pipe 5 has no clearance, turn the screw 7 clockwise with the screwdriver with central recess 8.

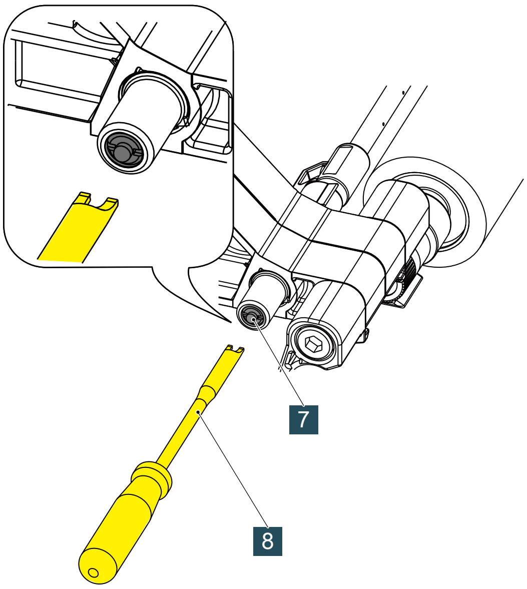


Figure 429: Air-jet pipe

6. If the clearance of the air-jet pipe 5 is more than 1 mm, turn the screw 7 counterclockwise with the screwdriver with central recess 8.

Result The air-jet pipe is set.

7.8.3 Pneumatic Unit

This section contains the information about how to set the pneumatic unit.

7.8.3.1 Setting the Main Pressure Valve

Prerequisites Make sure that the criteria are obeyed:

- ✓ The compressed-air pressure is 7 bar.
- ✓ The compressed-air consumption for each machine is 0.4 m^3/h.
- ✓ The machine is at a standstill.

1. Turn the handle 1 to the vertical position.

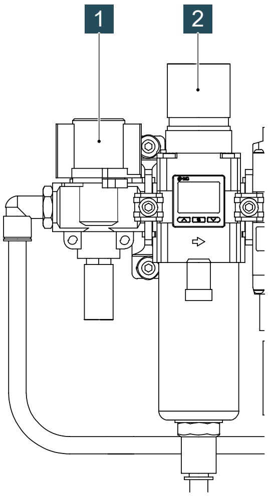


Figure 430: Main pressure valve

⇨ The main pressure valve is open.

2. Pull the screw 2 upward.

   ⇨ The screw 2 is unlocked.

3. Read the pressure at the manometer.
4. If the pressure is > 7 bar, turn the screw 2 counterclockwise.
5. If the pressure is < 7 bar, turn the screw 2 clockwise.
6. After the pressure is set correctly, push down the screw 2.

   ⇨ The screw 2 is locked.

Result The main pressure valve is set.

7.8.3.2 Releasing the Pressure from the Pressure Tank for the Aeropic (with ROBOlap)

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Pull up the pressure setting screw 1.

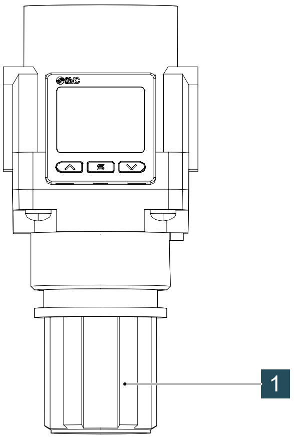


Figure 431: Compressed-air valve

2. Turn the pressure setting screw 1 counterclockwise.
3. Push the button 2.

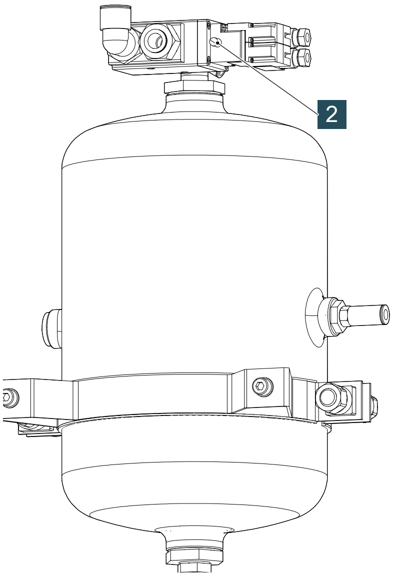


Figure 432: Pressure tank

⇨ The valve is opened with the manual control.

⇨ The pressure releases through the Aeropic.

Result The pressure is released from the pressure tank for the Aeropic.

7.8.3.3 Starting the Pneumatic Valves Manually

The machine has 2 groups of pneumatic valves that are at the delivery unit and at the longitudinal section.

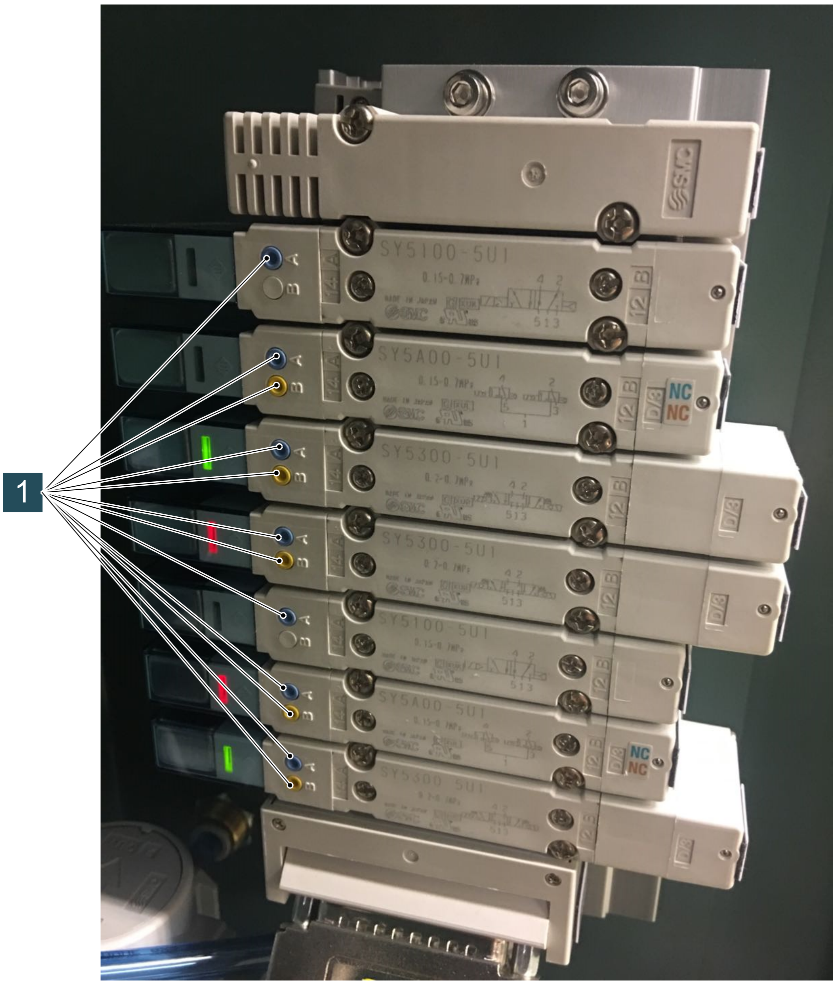

1
SY5100-5U1
SY5A00-5U1
SY5300-5U1
NC
NC
SMC

Figure 433: Pneumatic valves at the longitudinal section

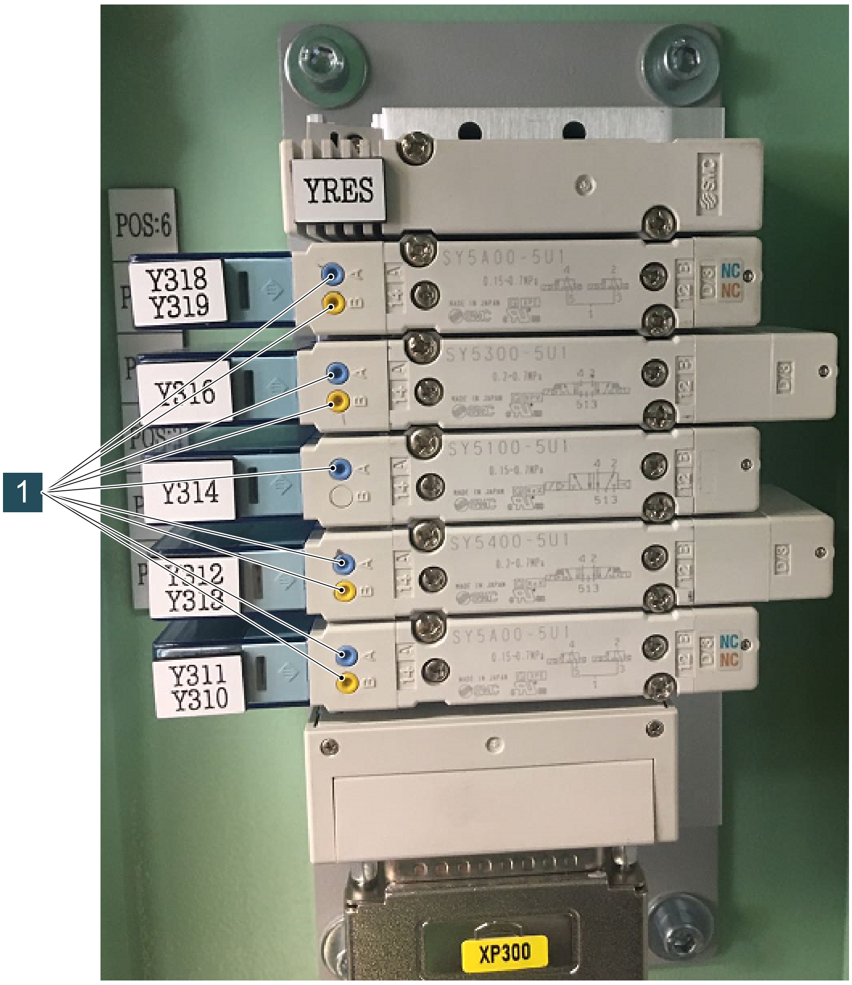

YRES
POS:6
Y318
Y319
Y316
Y314
Y312
Y313
Y311
Y310
SY5A00-5U1
SY5300-5U1
SY5100-5U1
SY5400-5U1
SY5A00-5U1
NC
NC
XP300
1

Figure 434: Pneumatic valves at the delivery unit

The LED at the pneumatic valve is only on if the valve is started electrically.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ All doors and all hoods with magnetic switches are closed.
- ✓ 2 personnel are necessary.

1. Push the button 1 on 1 pneumatic valve with a thin object for more than 2 s.
2. Let the second person make sure that the related part moves correctly.
3. Remove the pushed object.

   ⇨ The pneumatic valve is not charged.

Result The pneumatic valves are started manually.

7.8.3.4 Draining the Pressure Tank for the Aeropic (with ROBOlap)

Prerequisites Make sure that the criteria are obeyed:

- ✓ The pressure is released from the pressure tank for the Aeropic.
- ✓ The machine is at a standstill.

CAUTION

Compressed air!

The compressed air released from the pressure tank can cause injuries.

- ▶ Do NOT remove parts from the pressure tank or valve.
- ▶ Release the pressure of pressure tank before the maintenance work.

1. Remove the bolts 1.

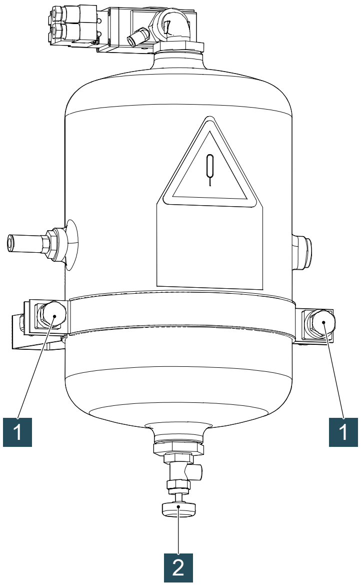


Figure 435: Pressure tank for the Aeropic

⇨ The pressure tank is possible to be pulled out of the machine.

2. Put the pressure tank onto a container.
3. Turn the valve head 2 clockwise.

⇨ The water flows from the pressure tank into the container.

4. Turn the valve head 2 counterclockwise.
5. Install the bolts 1.

Result The pressure tank for the Aeropic is drained.

7.8.3.5 Setting the End Position Damping

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.

1. Turn the screw 1 until the screw is at the limit position.

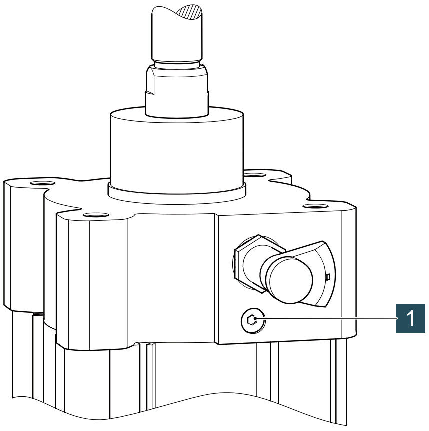


Figure 436: End position damping

2. Turn the screw 1 counterclockwise by a 1/4 revolution.
3. Start the pneumatic cylinder.
4. Make sure that the pneumatic cylinder moves correctly.
5. If the piston does not go to the correct position, turn the screw 1 counterclockwise by 1/4 revolution.
6. Do the steps 3 - 5 again.

Result The end position damping is set.

7.8.3.6 Setting the Lap Carrier

To lift the lap carrier or lower the lap carrier, the key **Lift** or the key **Lower** is to be tapped in the data screen 7.1.7.5 ROBOlap 5.

Setting the Pneumatic Cylinder and the Magnetic Switch

⚠ **WARNING**

Moving lap carriers!

Hand squeezing

▶ Keep hands away from lap carriers when the lap carriers are lowered.

1. To extend the pneumatic cylinder 2, tap the key **Lift** in the field **Lap carrier** in the data screen 7.1.7.5 ROBOlap 5.

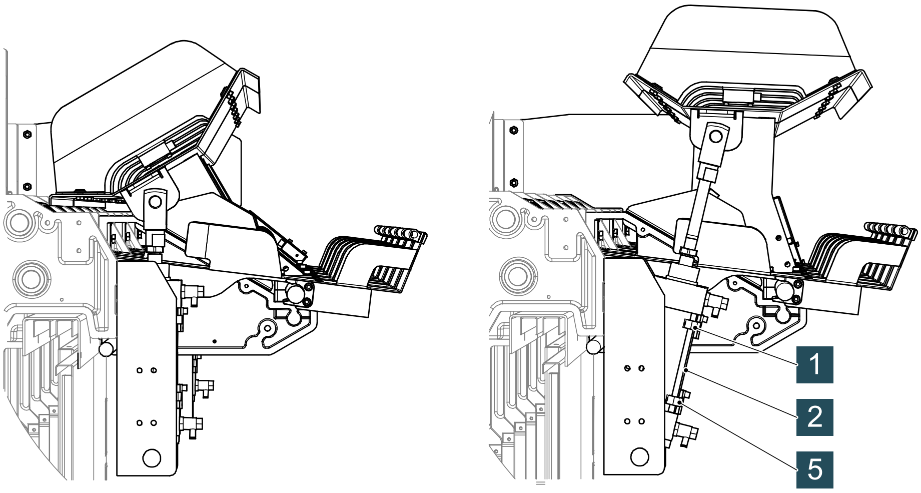


Figure 437: Pneumatic cylinder and magnetic switch

2. **WARNING! Lower lap carriers! Hand injury because of squeezing by the lower lap carriers**. To retract the pneumatic cylinder 2, tap the key **Lower** in the field **Lap carrier** in the data screen 7.1.7.5 ROBOlap 5.
3. Set the speed of the pneumatic cylinder 2 at the outlet throttle.

   ⇨ The laps move quickly but lightly onto the lap rollers.
4. Set the end position damping. (*refer to ▸ 370*)
5. Set the magnetic switch 1.
6. Set the magnetic switch 5.

   ⇨ The pneumatic cylinder and the magnetic switch are set.

Setting the Top Position

1. Lift the lap carrier 3.

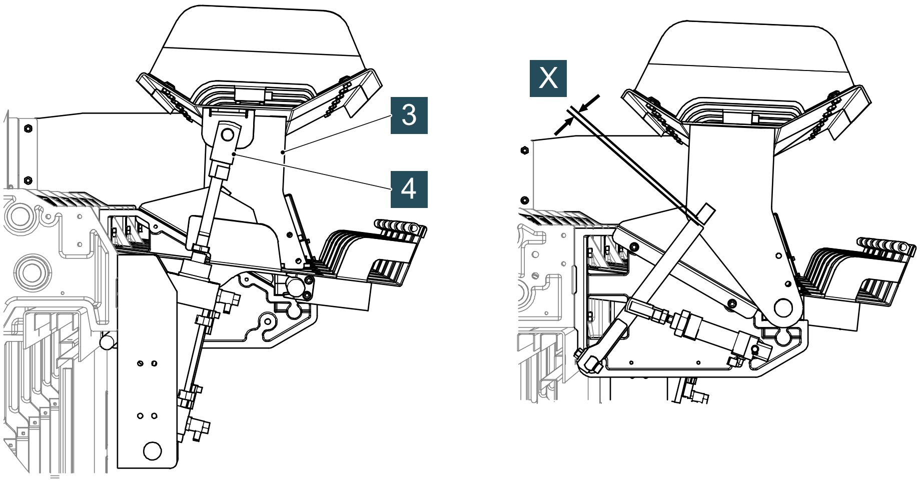


Figure 438: Top position

2. Select the related function in the data screen.
3. Set the distance X at the fork head 4 to 2 – 4 mm.

   ⇨ The top position is set.

Result The lap carrier is set.

7.8.4 Control System

This section contains the information about how to set the control system.

7.8.4.1 Replacing the Frequency Converters

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.
✓ 3.5 ml of heat transfer compound for the frequency converter is to be used.
✓ 1.5 ml of heat transfer compound for the frequency converter is to be used.

DANGER

Remaining electricity in the frequency converter!

Death or dangerous burn injury through the electric shock

- ▶ Set the main switch to the position OFF. Padlock the main switch.
- ▶ Do **NOT** touch the device that has remaining electricity until the LED for the charge display is off.
- ▶ Wait for 10 min until the frequency converter voltage becomes 0 V.
- ▶ Do **NOT** touch the device during the discharge time.

Removing the Frequency Converter

1. Remove the Ethernet cables from the Powerlink card.
2. Remove the Powerlink card.
3. Disconnect all wires.
4. Loosen the screw at the cover.
5. Remove the cover from the front.
6. Make sure that the codes of the cables and the terminal lettering are the same.
7. Disconnect the cables from the power terminal.
8. Disconnect the Brake cables from the brake terminals.
9. Disconnect the DC-Bus cable from the DC-Bus terminal.
10. Disconnect the ground cable from the ground terminal.
11. Remove the screws.

DANGER

Remaining electricity in the frequency converter!

Death or dangerous burn injury through the electric shock

- Set the main switch to the position OFF. Padlock the main switch.
- Do **NOT** touch the device that has remaining electricity until the LED for the charge display is off.
- Wait for 10 min until the frequency converter voltage becomes 0 V.
- Do **NOT** touch the device during the discharge time.

12. Remove the frequency converter without the connecting wires from the control cabinet.

    ⇨ The frequency converter is removed.

Installing the Frequency Converter

1. Set the DIP switch S3 from SINK to SOURCE for the new frequency converter.

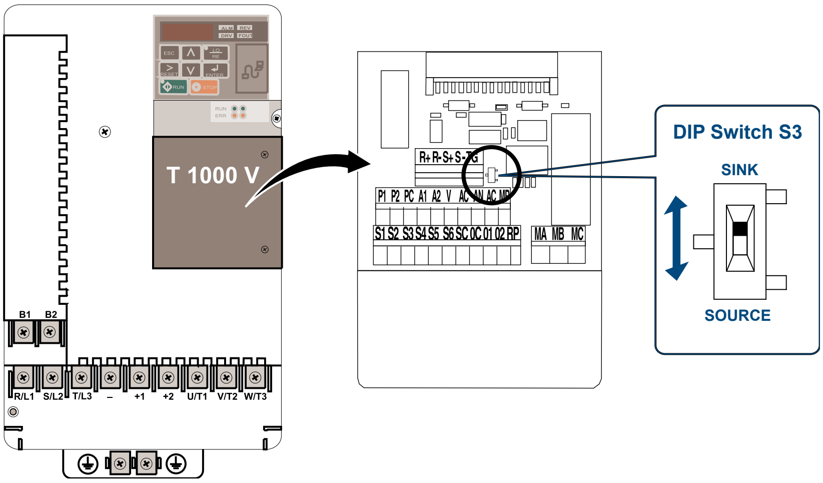


Figure 439: DIP switch S3

2. Remove the heat transfer compound that Is on the contact surface of the heat sink.
3. To apply 3.5 ml (or 1.5 ml) of the heat transfer compound to the cooling plate of the frequency converter equally, use the spatula.
4. Lift the frequency converter into the control cabinet.
5. To attach the frequency converter to the control cabinet, install the screw.
6. Do a check of the labels of the terminals and the cables.
7. Connect the cable with the power terminals.
8. Connect the braking resistor.

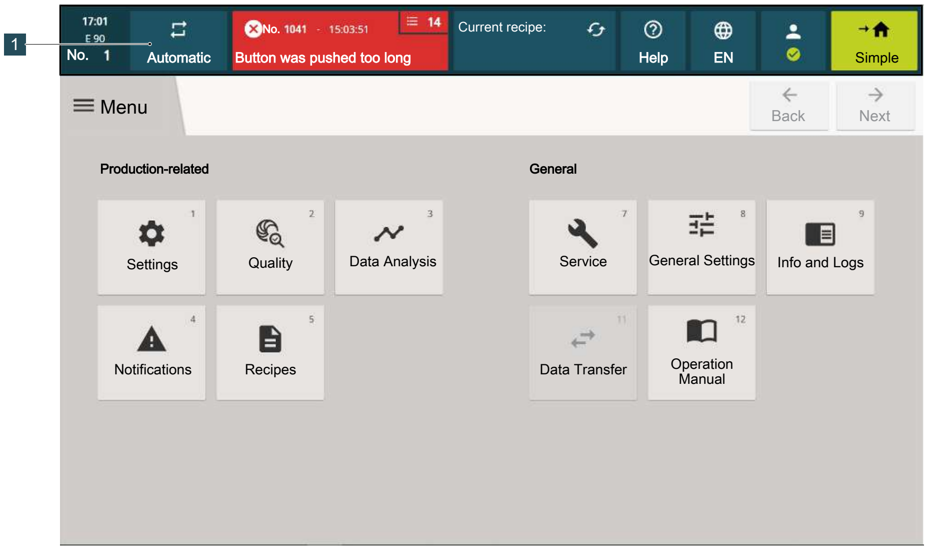
9. Connect the DC-Bus cable with the DC-Bus terminal.
10. Connect the grounded conductor with the grounded terminals.
11. Install the screws on the cover.
12. Connect the control lines.
13. Install the Powerlink card.
14. Connect the Ethernet cables to the Powerlink card (refer to the electrical documentation).
    - ⇨ The frequency converter is installed.

Result The frequency converter is replaced.

7.8.4.2 Resetting the Machine

The warm start or the cold start of the machine is not possible to repair the problems of the machine.

1. Tap the field 1 in the data screen.


1
17:01
E 90
No. 1
Automatic
14
Current recipe:
Help
EN
Simple
Menu
Back
Next
Production-related
General
1
Settings
2
Quality
3
Data Analysis
7
Service
8
General Settings
9
Info and Logs
4
Notifications
5
Recipes
11
Data Transfer
12
Operation Manual

No. 1041 · 15:03:51
Button was pushed too long

Figure 440: Mode change

- ⇨ The machine is changed to the operating mode Service .
- ⇨ Most of the automatic functions are set again.
- ⇨ If the machine is reset during the ROBOlap process, the process is canceled and is not possible to be started again automatically. (The piecing of the laps is only possible to be done manually.)

2. Tap the field 1 in the data screen.
    - ⇨ The machine is changed to the operating mode Automatic .
    - ⇨ If the machine is in a fault condition, the machine is possible to be started again.

7.8.5 Doing a Function Test of the Tube Lever

To move the tube lever forward or rearward, the key **Press on** or the key **Neutral** in the data screen 7.1.7.4 ROBOlap 4 is to be tapped.

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Put an empty tube onto each combing unit.
2. Select the operating mode **Service mode** in the advanced display.
3. Move the tube lever forward and rearward in the data screen 7.1.7.4 ROBOlap 4.
4. Make sure that the pawl 2 of the tube lever retracts when the pawl starts to touch the tubes 1.
5. Make sure that the pawl 2 of the tube lever is stretched when the pawl goes into the hollow fields of the tubes 1.

   ⇨ The pawl operates correctly as shown in the figure that follows.

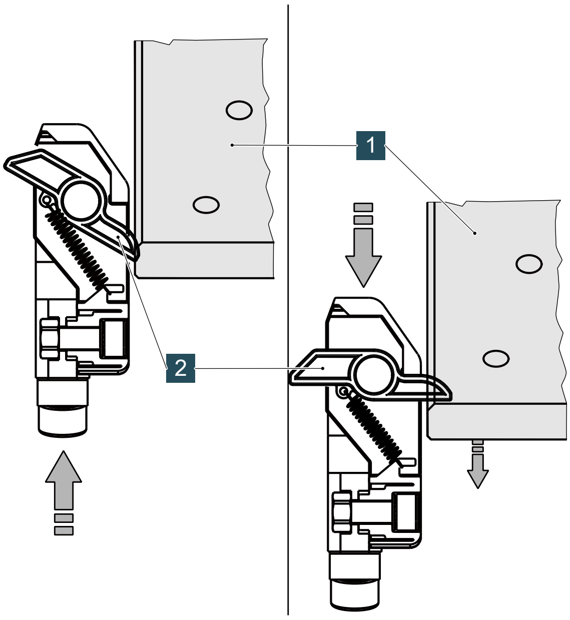


Figure 441: Tube lever

Setting the Rear Position of the Tube Lever

1. Move the tube lever rearward to the rear position with the keys in the data screen 7.1.7.4 ROBOlap 4.
2. Do a check of the pawl 2.

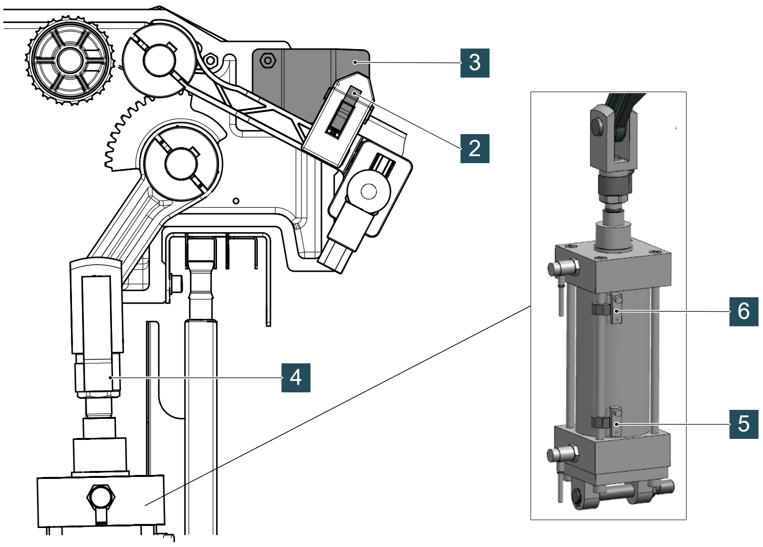


Figure 442: Rear position of the tube lever

3. If the pawl **2** is not in the middle of the shift gate **3** and the pawl is not disengaged, set the rear position at the fork head **4**.
4. Move the bottom magnetic switch **5** at the cylinder until the LED of the magnetic switch is on.
5. Tighten the magnetic switch.

Setting the Front Position of the Tube Lever

1. Move the tube lever forward to the front position with the keys in the data screen 7.1.7.4 ROBOlap 4.
2. Measure the distance **X**.

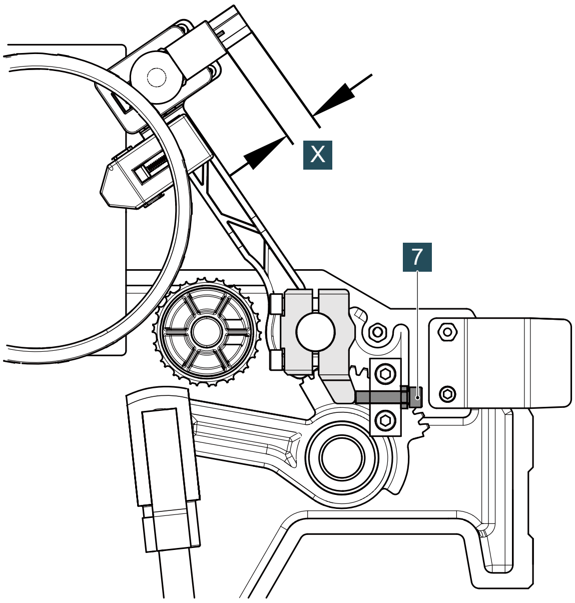


Figure 443: Front position of the tube lever

3. If the distance X is < 8 mm, turn the screw 7 (on intermediate frame 3 and 5) counterclockwise.
4. If the distance X is > 10 mm, turn the screw 7 (on intermediate frame 3 and 5) clockwise.
5. Move the top magnetic switch 6 at the cylinder until the LED of the magnetic switch is on.
6. Tighten the magnetic switch.

Setting the Tube Guide

1. Move the tube lever to the rear position with the keys in the data screen 7.1.7.4 ROBOlap 4.
2. Set the distance T to 303 ±0.5 mm.

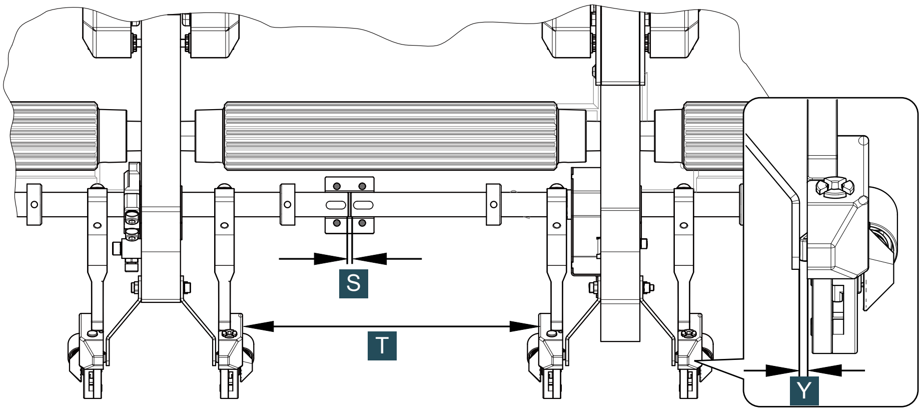


Figure 444: Tube guide

3. Set the distance **S** to 2 mm.
4. Set the distance **Y** to 1 - 3 mm.

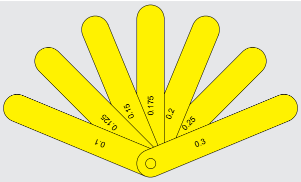
Result The function test of the tube lever is done.

7.8.6 Measuring the Distance between the Circular Comb and the Nipper

Distance between the Circular Comb and the Nipper	
Range	0.2 mm – 0.8 mm
Guide value	0.3 mm

Prerequisites Make sure that the criteria are obeyed:

✓ A feeler gauge is to be used.

Tool	Tool Name	Function Description
	Feeler gauge	The feeler gauge is used to measure the distance between the circular comb and the nipper.

1. Set the detaching distance to the value which is used for production.
2. Set the machine to Index 24.
3. Open the nipper.
4. Turn the feed roller rearward.

   ⇨ The batt is moved back approximately 30 mm.
5. Clean the nipper plates.
6. Close the nipper again.
7. Set the machine to Index 39.
8. Measure the distance **A**.

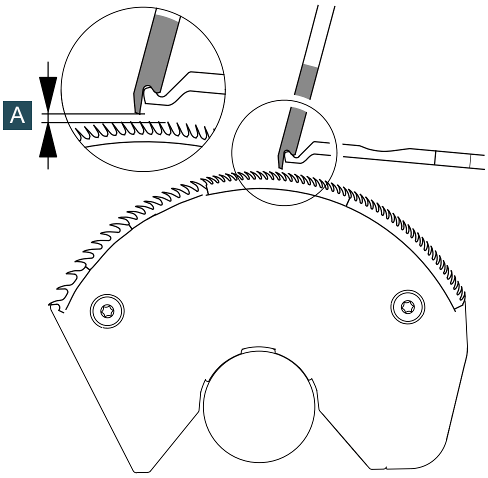


Figure 445: Distance between the circular comb and the nipper

9. Calculate the difference between the distance A and the target distance.
10. If the difference is > 0.05 mm, set the distance between the circular comb and the nipper (*refer to* ▸ *380*).

Result The distance between the circular comb and the nipper is measured.

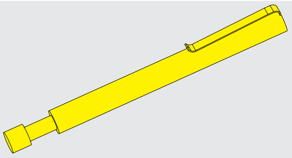
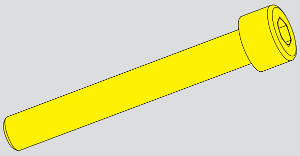
7.8.7 Setting the Distance between the Circular Comb and the Nipper

The distance between the circular comb and the nipper is possible to be set by increasing or decreasing the number of spacer disks below the circular comb.

If the detaching distance is changed by more than 3 mm, the distance between the circular comb and the nipper is to be measured (*refer to* ▸ *379*).

Prerequisites Make sure that the criteria are obeyed:

✓ A magnetic sensing pin is to be used.
✓ 2 M-8 screws are to be used.

Tool	Tool Name	Function Description
	Magnetic sensing pin	The magnetic sensing pin is used to remove the spacer disk from a circular comb.
	M 8 screw	The M 8 screw is used to remove the bar from a circular comb.

1. Do a check if the distance A between the circular comb 1 and the nipper is the same at all 8 combing units.

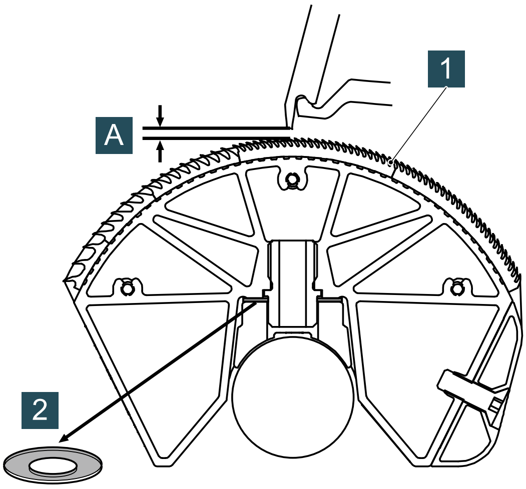


Figure 446: Distance between the circular comb and the nipper

2. If the distance A is smaller at a combing unit than at the other combing units, decrease the number of spacer disks 2.
3. If the distance A is larger at a combing unit than at the other combing units, increase the number of spacer disks 2.

   ⇨ The distance A is the same at all 8 combing units.

Calculating the Actual Value

1. Put the circular comb 1 onto the work surface.

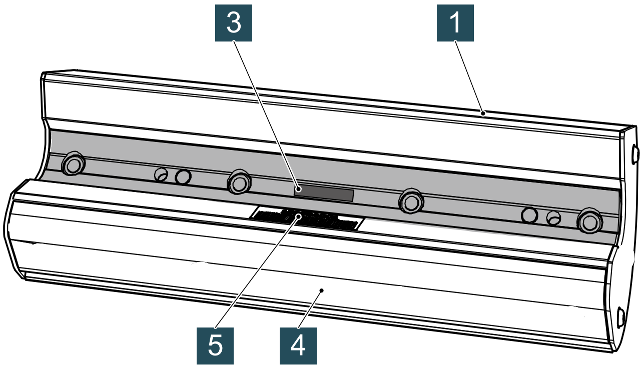


Figure 447: Circular comb

2. Make sure that the spoiler 4 is at the front.
3. Make sure that the number of combing units 1 – 8 is shown on the circular comb 1.
4. Make sure that the numbers 3 on the bar 7 and the numbers 5 on the circular comb 1 are the same.

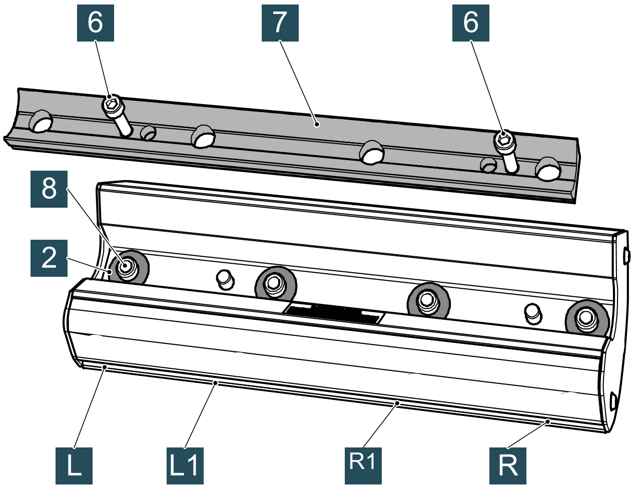
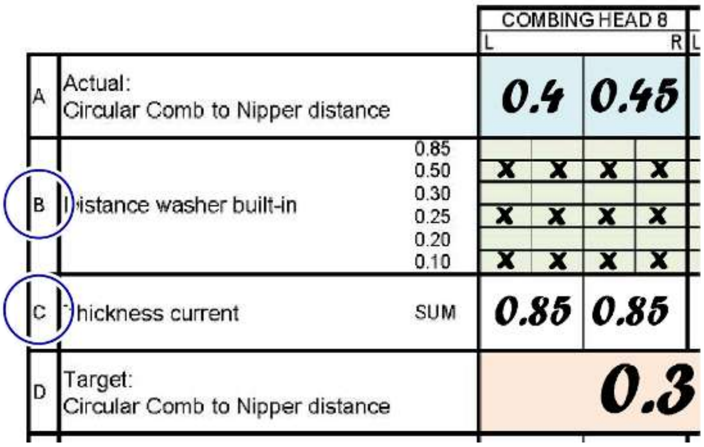


Figure 448: Bar

5. Engage the M 8 screws 6 into the bar 7.

   ⇨ The bar 7 is removed.

6. Make sure that the spacer disks 2 stay on the guide bolts 8.
7. Calculate the thickness of the 4 spacer disk packages L, L1, R1, and R.
8. Select the spacer disks that are used in the test report in the line B.



			COMBING HEAD 8			
			L			R
A	Actual: Circular Comb to Nipper distance		0.4		0.45	
B	Distance washer built-in	0.85				
		0.50	X	X	X	X
		0.30				
		0.25	X	X	X	X
		0.20				
		0.10	X	X	X	X
C	Thickness current	SUM	0.85		0.85	
D	Target: Circular Comb to Nipper distance		0.3			

Figure 449: Test report

9. Add up the thickness of all spacer disks.
10. Record the total thickness of the spacer disks in the line C.

Calculating the Correction Value

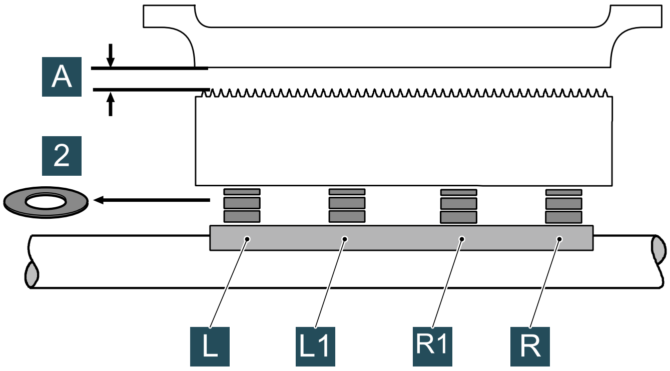
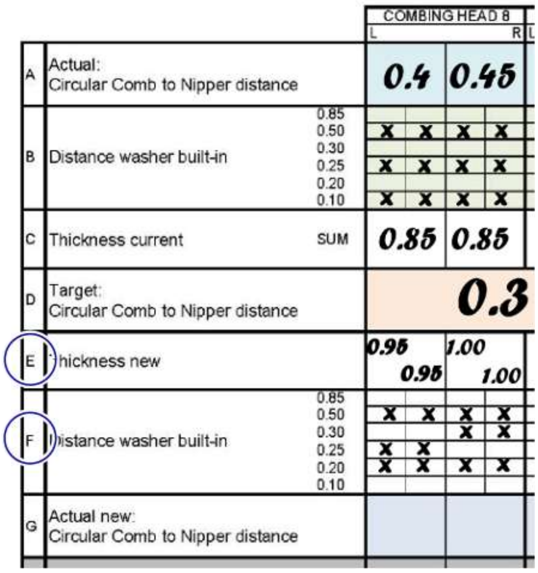


Figure 450: Guide bolts

1. Calculate the correction value of the outer guide bolts L and R.
2. If the difference between L and R is ≤ 0.1 mm, make the inner guide bolts L1 and R1 the same as the outer guide bolts L and R.

   ⇨ L = L1 / R1 = R
3. If the difference between L and R is ≥ 0.15 mm, select the applicable inner guide bolts L1 and R1.

   ⇨ L ≠ L1 / R1 ≠ R
4. Record the correction value for each guide bolt in the line E of the test report.



			COMBING HEAD 8			
			L			R
A	Actual: Circular Comb to Nipper distance		0.4		0.45	
B	Distance washer built-in	0.85				
		0.50	X	X	X	X
		0.30				
		0.25	X	X	X	X
		0.20				
		0.10	X	X	X	X
C	Thickness current	SUM	0.85		0.85	
D	Target: Circular Comb to Nipper distance		0.3			
E	hickness new		0.95	0.95	1.00	1.00
F	istance washer built-in	0.85				
		0.50	X	X	X	X
		0.30			X	X
		0.25	X	X		
		0.20	X	X	X	X
		0.10				
G	Actual new: Circular Comb to Nipper distance					

Figure 451: Test report

5. Select the corrected spacer disks from the line F of the test report.

   ⇨ The total thickness is equal to the correction value in the line E.

Setting the Circular Comb

1. Remove the used spacer disks 2 with the magnetic sensing pin.
2. To set the new spacer disk packages, refer to the line F of the test report.
3. Clean the bar 7.
4. Install the bar 7.
5. Loosen the screws 6.
6. Make sure that the bar 7 is correctly installed.
   ⇨ The circular comb is set.

Result The distance between the circular comb and the nipper is set.

7.8.8 Can Changer

This section contains the information about how to set the can changer.

7.8.8.1 Setting the Distance between the Can Guides and the Can

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

⚠ **CAUTION**

Moving machine parts!

Risk of hand injuries because of the moving machine parts

▶ Set the main switch to the position OFF.
▶ Padlock the main switch.
▶ Make sure that the machine is at standstill.

1. **CAUTION! Moving machine parts! Risk of hand injuries because of the moving machine parts.** Remove the cover 6 from the catch levers 1 and 5.

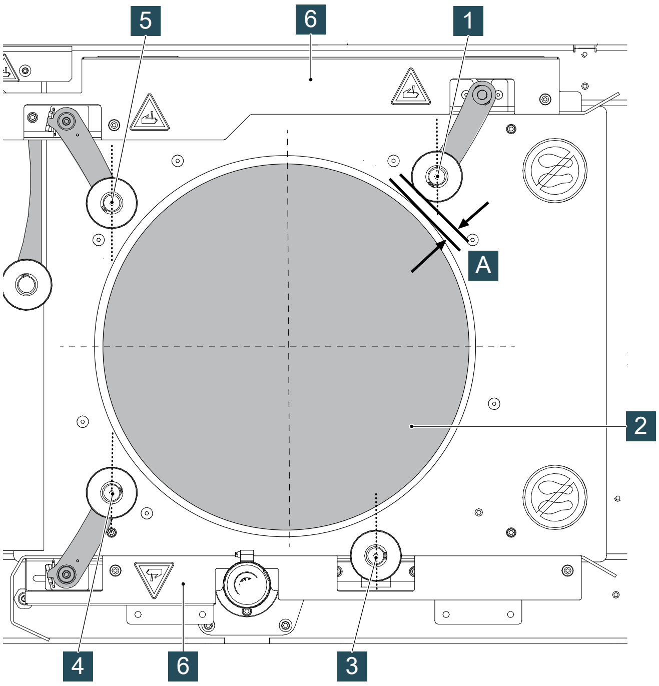


Figure 452: Top view of the distance between the can guide and the can (CD 600)

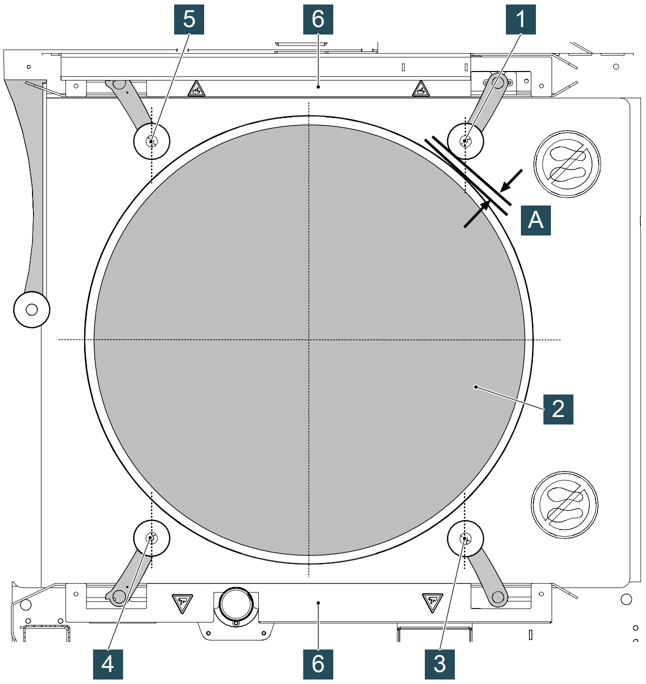


Figure 453: Top view of the distance between the can guide and the can (CD 1000 1200)

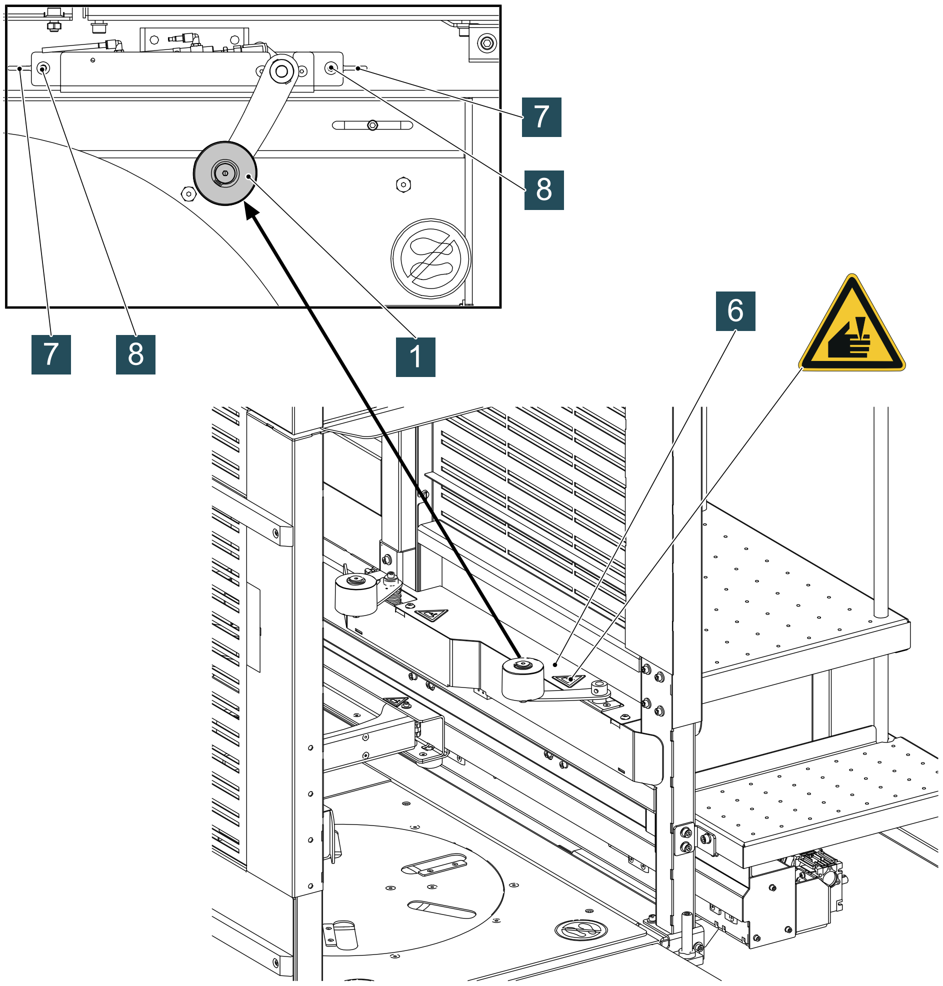


Figure 454: Top view of the can guide

2. Loosen the 2 screws 8.
3. To set the distance A between the catch lever 1 and the can 2 to 5 mm, move the assembly of the catch lever 1 along the slots 7 of the can guide.

   ⇨ The distance A is set to 5 mm.
4. Tighten the screws 8.
5. Set the distance between the catch lever 5 and the can 2 to 5 mm in the same procedure with the steps 2 and 4.
6. Set the distance between the catch lever 3 and the can 2 to 5 mm in the same procedure with the steps 1 - 5.
7. Set the distance between the catch lever 4 and the can 2 to 5 mm in the same procedure with the steps 2 - 6.
8. Install the covers 6.

Result The distance between the can guides and the can is set.

7.8.8.2 Setting the Coiling

The can position is possible to be changed to change the distance A between the sliver 3 and the can 4.

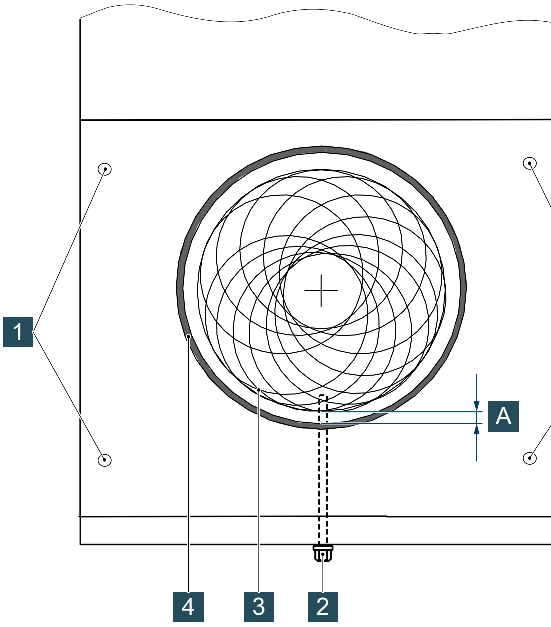


Figure 455: Top view of the distance between the sliver and the can

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Lift and remove the delivery ramp that is above the spindle 2.
2. Loosen the 4 screws 1 of the cover plate.

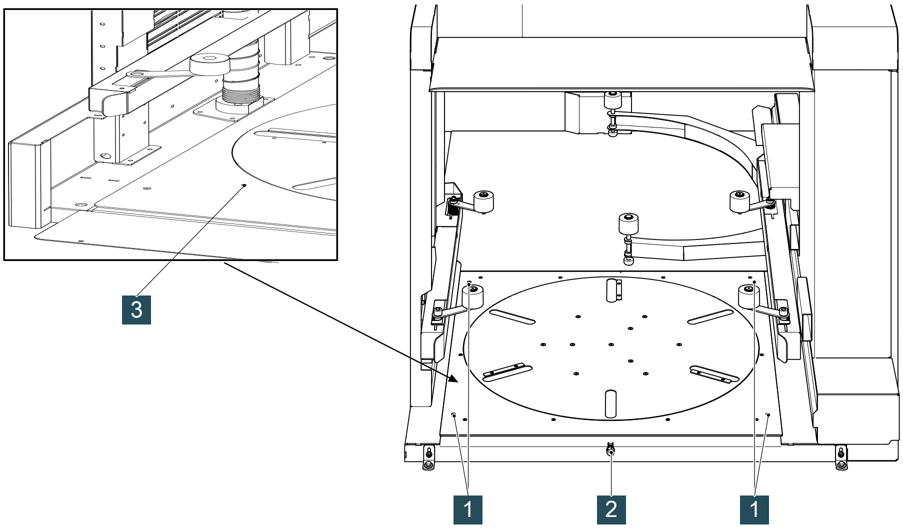


Figure 456: Can plate

3. To loosen the belt tensioner that is below the cover plate, loosen the screw at the hole 3.
4. To move the can near the spindle head, turn the spindle 2 clockwise.
5. To move the can away from the spindle head, turn the spindle 2 counterclockwise.
6. Make sure that the distance A between the sliver 3 and the inner side of the can 4 is between 8 and 10 mm.
7. Tighten the screw in the hole 3.
8. Tighten the 4 screws 1 of the cover plate.
9. Install the delivery ramp to the machine.

Result The coiling is set.

7.8.9 Lap Transport

This chapter contains the information about the setting of lap transport system.

7.8.9.1 Adjusting the Rocker for the SERVOtrolley

1. Put 2 lap trolleys that contain the laps into the machine.
2. Set the top end position at the fork head 1.

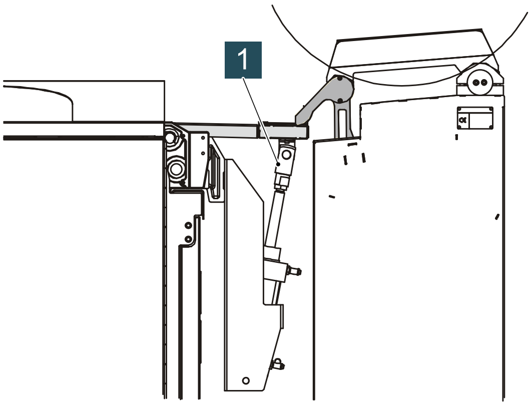


Figure 457: Rocker

3. Monitor how the tilting arm moves.
4. Examine the lap loading procedure.
   - ⇨ The laps move slowly onto the machine.

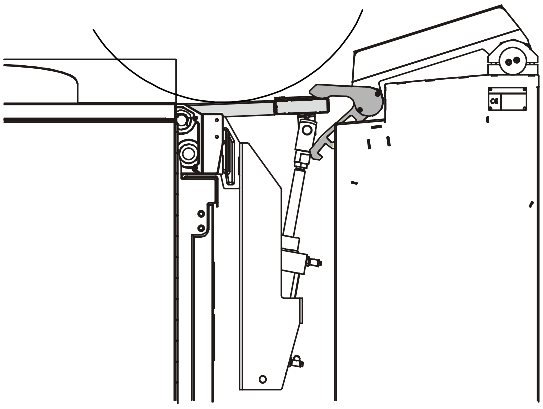


Figure 458: Rocker

Result The rocker is adjusted for the SERVOtrolley.

7.9 Preparation with Raw Material

This chapter contains the instructions on how to prepare the machine for the production.

7.9.1 Coiler

This chapter contains the information about how to adjust the coiler.

7.9.1.1 Adjusting the Coiler Speed

The related parameters of the coiler speed are possible to be selected in the data screen 1.3.3.3.

Checking the Coiler Speed

The quality of the sliver deposit is checked to identify the coiler speed. After a full can is pulled out, the machine must be stopped.

- The quality of the sliver deposit is good if the sliver deposit is wavy and draft-free as the part 1 shows in the figure **Quality of sliver deposit**.
- The sliver deposit is to be adjusted if the tension of the sliver is as the part 2 shows in the figure **Quality of sliver deposit**.

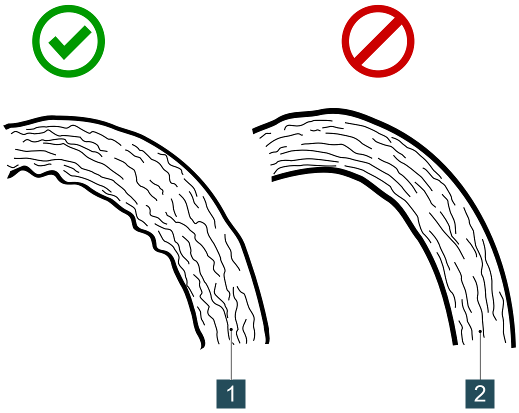


Figure 459: Quality of sliver deposit

Correct Coiler Speed

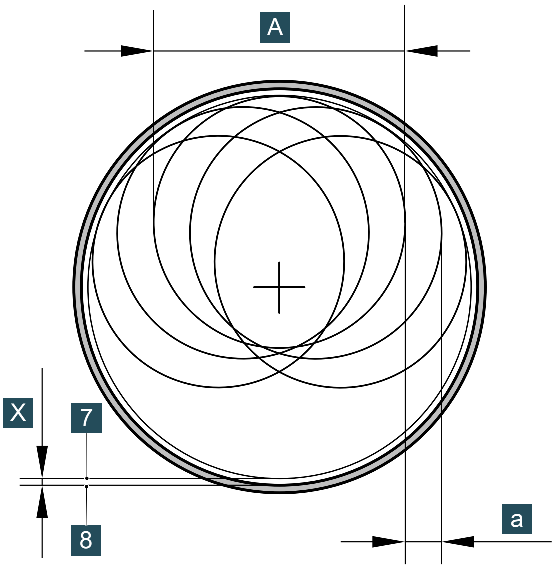


Figure 460: Correct coiler speed

7	Sliver column	8	Inner side of the can

If the coiler speed is correct, the coiler has the features that follow:

- The coiling diameter A all the same in the can.
- The loop distance a of the coiling diameter A is all the same in the can.
- The sliver column distance X is all the same in the can.

Low Coiler Speed

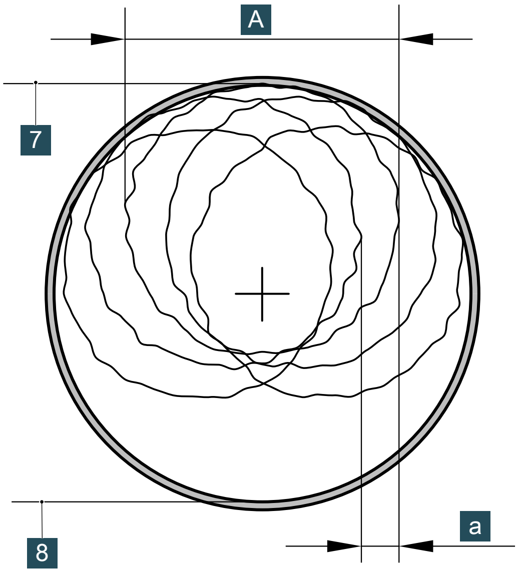


Figure 461: Low coiler speed

If the coiler speed is too low, the coiler has the features that follow:

- The loops of the sliver deposit are circular but too wavy.
- The loop distance a of the coiling diameter A is all the same in the can.
- The sliver touches the inner surface of the can 8 because the diameter of the sliver column 7 is too large.

High Coiler Speed

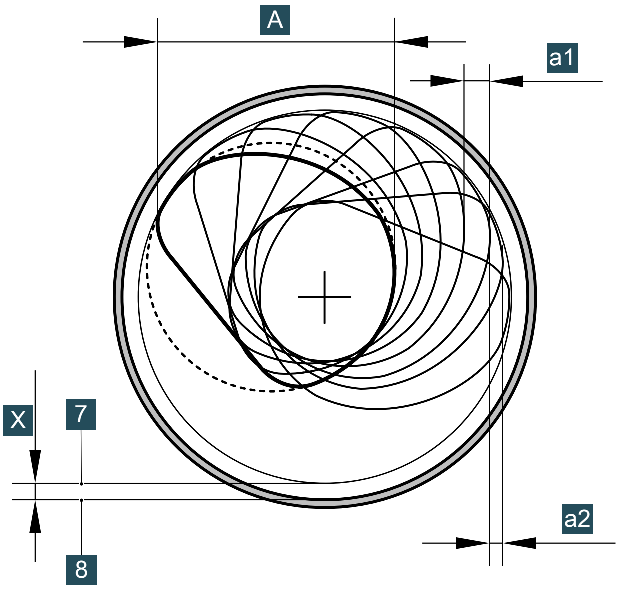


Figure 462: High coiler speed

If the coiler speed is too high, the coiler has the features that follow:

- The loops of the sliver deposit are not circular.

- The loop distance a1 and a2 of the coiling diameter A are different.
- The sliver column distance X is more than 5 mm.

7.9.1.2 Adjusting the Can Plate Speed

Before setting the can plate speed, the loop distance a must be checked.

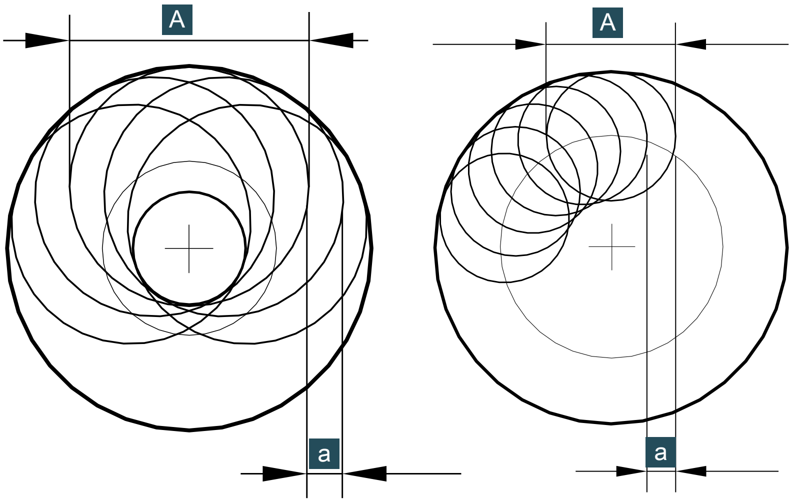


Figure 463: Loop distance

Checking the Loop Distance

- The loop distance a is correct if the slivers are in the correct area and the slivers do not show the hairiness when the fiber is removed from the can.

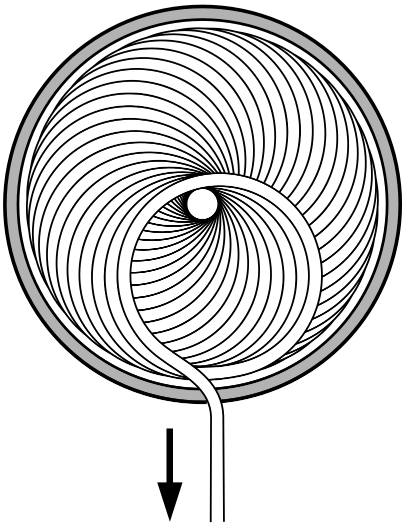


Figure 464: Correct loop distance

- The loop distance a is incorrect if the slivers are not in the correct area and the slivers show hairiness when the fiber is removed from the can.

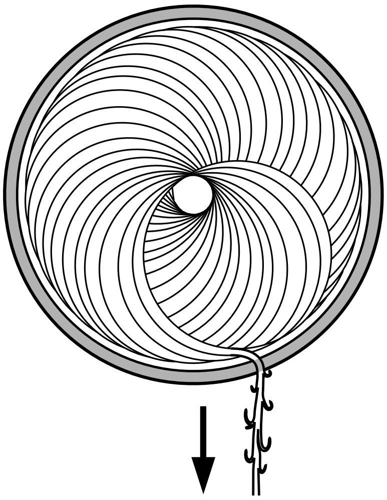


Figure 465: Incorrect loop distance

Adjusting the Can Plate Speed

The loop distance changes if the can plate speed changes. The pulley 1 at the position W5 is to be replaced to change the can plate speed in accordance with the table below (*refer to ▸ 394*).

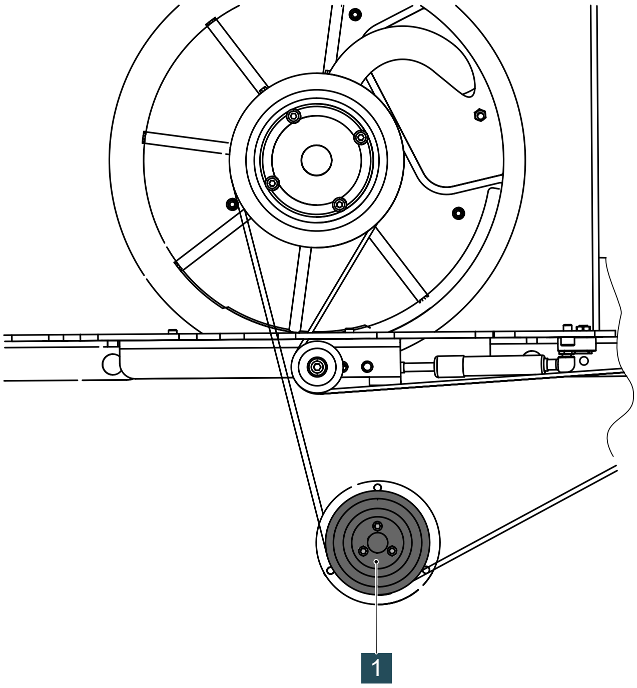


Figure 466: Pulley at the position W5

Loop Distance **a**	Diameter of the Pulley W5 (mm)
26	80
22	98

Loop Distance a	Diameter of the Pulley W5 (mm)
19	110

7.9.1.3 Replacing the Pulley at the Position W5

The can plate speed can be changed by changing the pulley at the position W5.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ A counter holder is to be used.

Removing the Pulley at the Position W5

1. Open the drafting system hood.
2. Open the cover of break draft belt.
3. Remove the coiler drive cover.
4. Remove the belt 4 (*refer to ▸ 620*).
5. Put the counter holder 1 into the 3 screws 2.

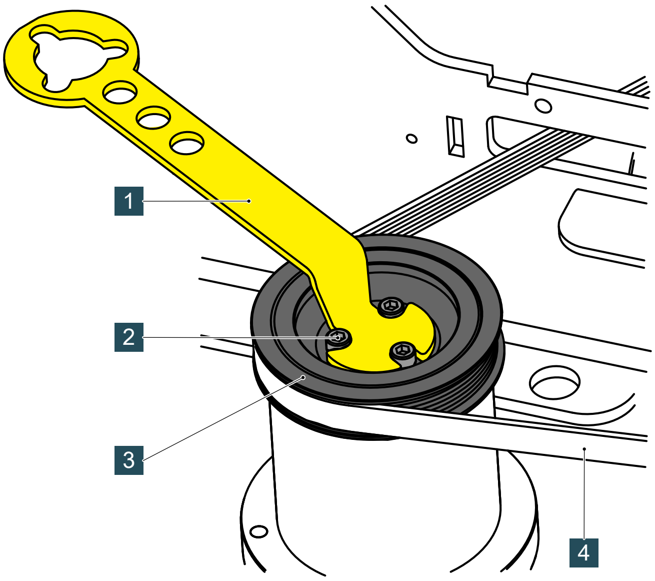


Figure 467: Replacement of the pulley at the position W5

6. Loosen the 3 screws 2.
7. Remove the 3 screws 2.
8. Remove the pulley 3.

   ⇨ The pulley at the position W5 is removed.

Installing the Correct Pulley at the position W5

1. Put the correct pulley W5 to the correct position.

2. Install the 3 screws 2 but tighten the screws only lightly.
3. Put the counter holder 1 into the screws 2.
4. Tighten the screws 2.
5. Install the belt 4 (*refer to ▸ 620*).
6. Install the coiler drive cover.
7. Close the cover of break draft belt.
8. Close the drafting system hood.

   ⇨ The pulley at the position W5 is installed.

Result The pulley at the position W5 is replaced.

7.9.1.4 Adjusting the Can Stock

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Measure the sliver column distance X between the sliver column 1 and the inner side of the can 2.

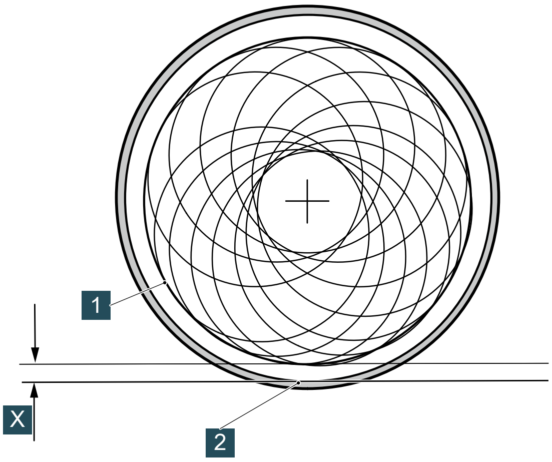


Figure 468: Sliver column distance

2. If the sliver column distance X is ≤ 5 mm when the can is 3/4 full, do the steps from 3 – 6.
3. Loosen the screw 5.

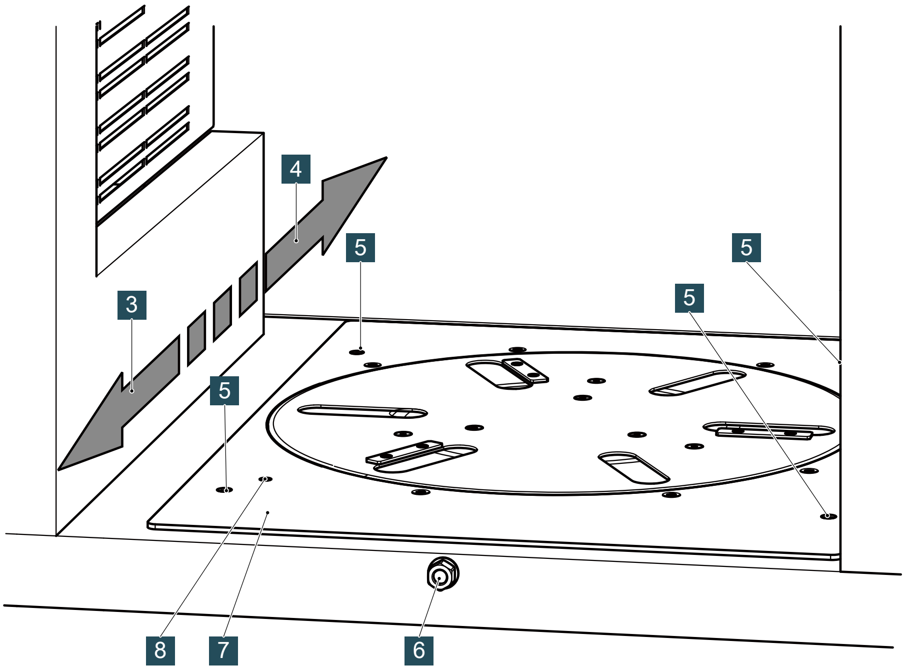


Figure 469: Setting of sliver column distance

4. Loosen the screw 8.
5. Mark the position of the edge of the can plate 7.
6. Move the can plate 7 forward 3 with the spindle 6.
7. Tighten the screws 5.
8. Tighten the screw 8.
9. If the sliver column distance X is ≥ 8 mm when the can is 3/4 full, do the steps 10 – 15.
10. Loosen the screws 5.
11. Loosen the screw 8.
12. Mark the position of the edge of the can plate 7.
13. Move the can plate 7 rearward 4 with the spindle 6.
14. Tighten the screws 5.
15. Tighten the screw 8.

Result The can stock is adjusted.

7.9.2 Quality

This chapter contains the information about how to make the batt with high quality.

7.9.2.1 Setting the Batt Tension (without ROBOlap)

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Change the batt tension in % of the lap rollers 1 at the operating unit.

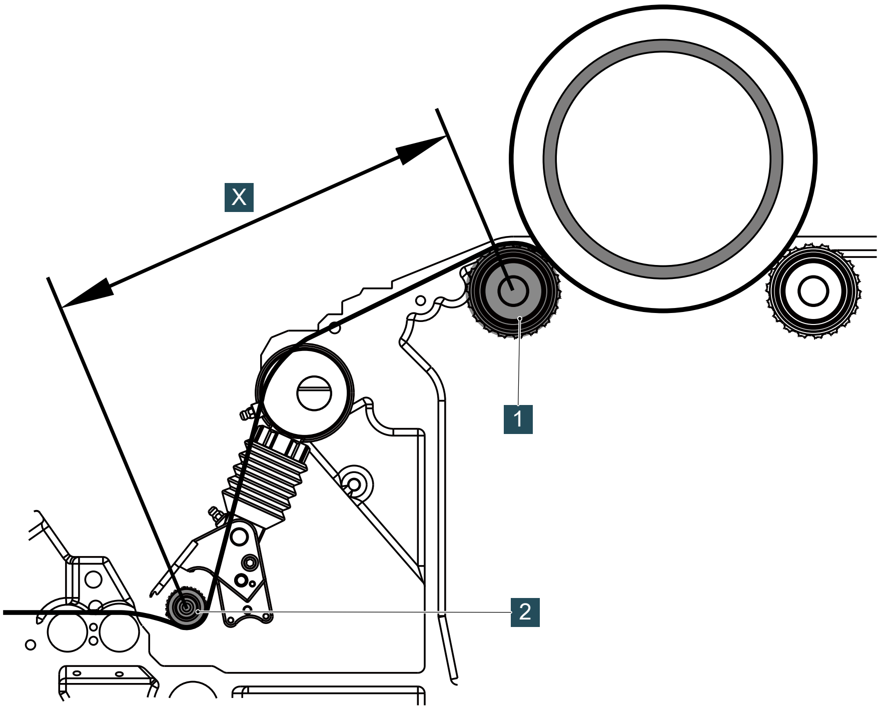


Figure 470: Batt tension (without ROBOlap)

⇨ The batt tension X is changed.

2. Make sure that the batt tension X is as small as possible and as large as necessary.
3. Make sure that the feed cylinder 2 moves the lap equally.

Result The batt tension is set.

7.9.2.2 Setting the Batt Tension (with ROBOlap)

The batt tension X is to be equally supplied to the batt tension A and the batt tension B. If the batt tension X is 12 %, the batt tension A and the batt tension B are to be 6 %.

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Change the batt tension in % of the lap rollers 1 at the operating unit.

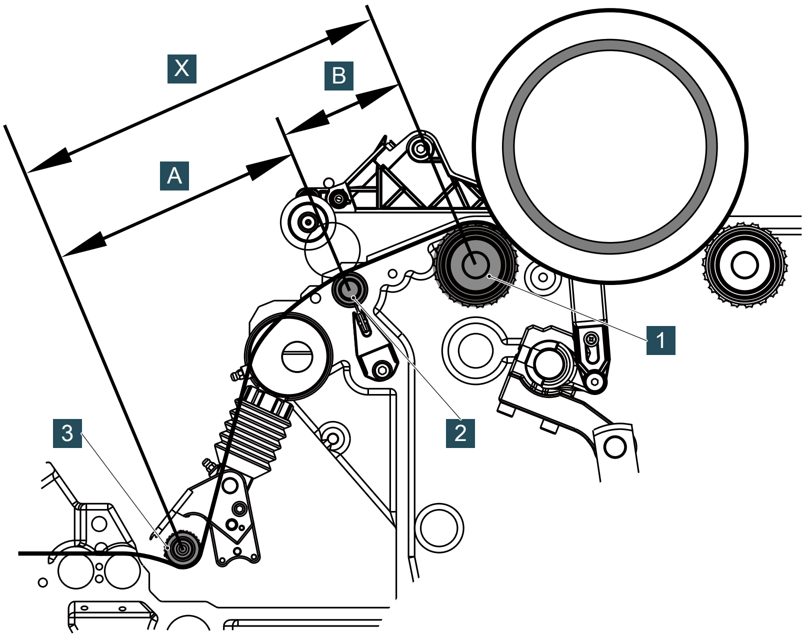


Figure 471: Batt tension (with ROBOlap)

⇨ The batt tension X is changed.

2. Make sure that the batt tension X is as small as possible and as large as necessary.
3. Make sure that the feed cylinder 3 moves the lap equally.
4. Set the delivery speed of the carrier roller 2.
5. Make sure that the batt tension A is equal to the batt tension B.

⇨ The batt tension X is divided into the batt tension A and batt tension B (*refer to* ▸ *94*).

Result The batt tension is set.

7.9.2.3 Setting the Delivery Speed of the Carrier Roller

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

✓ The change pulley to set the delivery speed of the carrier roller is selected (*refer to* ▸ *92*).

1. To set the delivery speed of the carrier roller, replace the pulley 2.

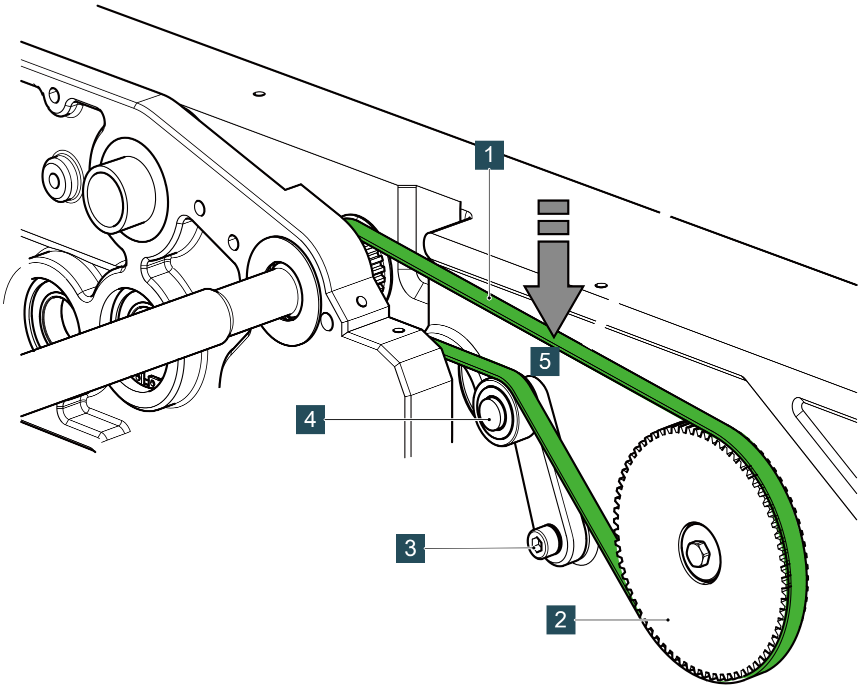


Figure 472: Pulley for the carrier roller

2. Install the timing belt 1 in accordance with the selected pulley (*refer to ▸ 92*).
3. Apply tension to the timing belt 1 with the tension roller 4.
4. Tighten the screw 3.
5. Check the tension of the timing belt 1 at the measuring point 5.
   ⇨ Make sure that the belt tension is between 85 and 95 Hz.
6. Before the lap change, check the batt tension when the pressure roller lowers.
7. If necessary, make corrections (*refer to ▸ 94*).
8. Record the current pulley 2 in the operating unit.

Result The delivery speed of the carrier roller is set.

7.9.2.4 Setting the Piecing

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. To set the detaching point, use the control disk 1.

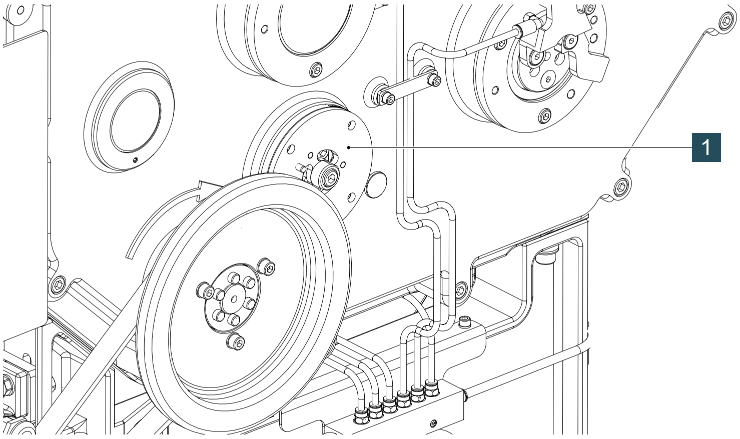


Figure 473: Control disk

⇨ The fiber overlap is changed.

2. To find the best area, try out all positions on the scale at a larger step. (The best adjustment is possible to be found if the web is checked and a spectrogram is used.)
3. Try the scale instruction in the best area.
4. Find the point V in the spectrogram.

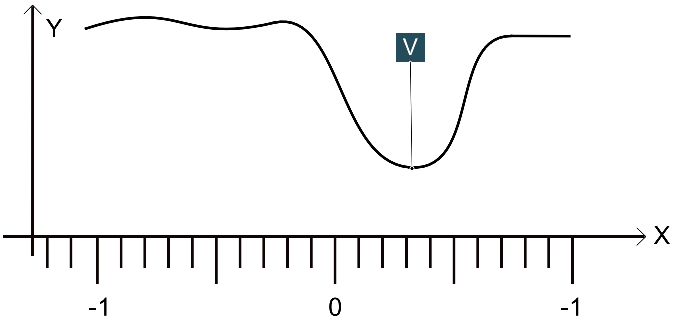


Figure 474: Spectrogram

5. Clean the machine.
6. Polish the sheet components that come into contact with the cotton on the machine.
7. Set the batt tension (option: manual batt piecing (*refer to* ▸ *396*) or option: ROBOlap (*refer to* ▸ *397*)).
8. Set the table draft.
9. Try out the positions of the control disk after each 2 scale marks.
10. Set the control disk 1 (*refer to* ▸ *401*).
11. Start the machine at each position of the 2 scale marks.
12. Make sliver samples.

13. Record the position that the control disk has to the sliver samples.
14. Make a spectrogram.
15. For the position with the best spectrogram, do the test that follows.
16. Do the test with the sub-scale between the 2 scale marks.
17. Measure the sliver evenness.

Result The piecing is set.

7.9.2.5 Setting the Control Disk

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Set the machine to Index 24.
2. To lock the gear with the index-locking pin 1, turn and push the pin 1 into the lid 9.

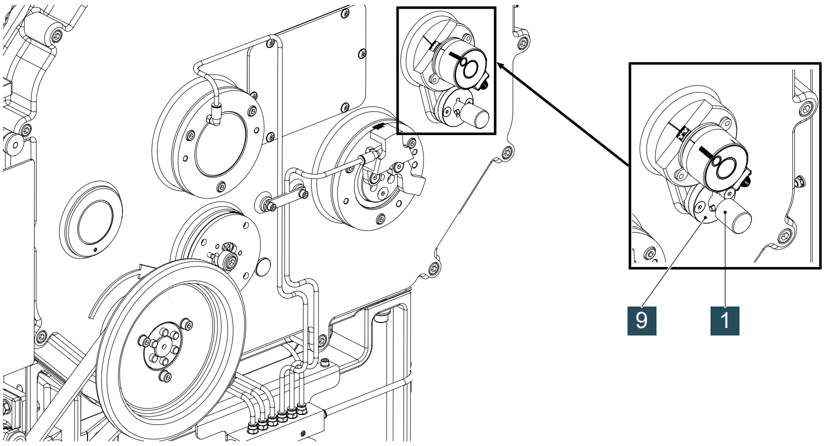


Figure 475: Index-locking pin

3. Turn the pin 1 clockwise lightly to attach the pin to the lid 9
4. If the pin 1 is not possible to be put into the hole, release the brake and turn the pulley until the index-locking pin 1 is possible to be put into the hole.
5. Loosen the screws 3 until the screw heads touch the control disk 2.

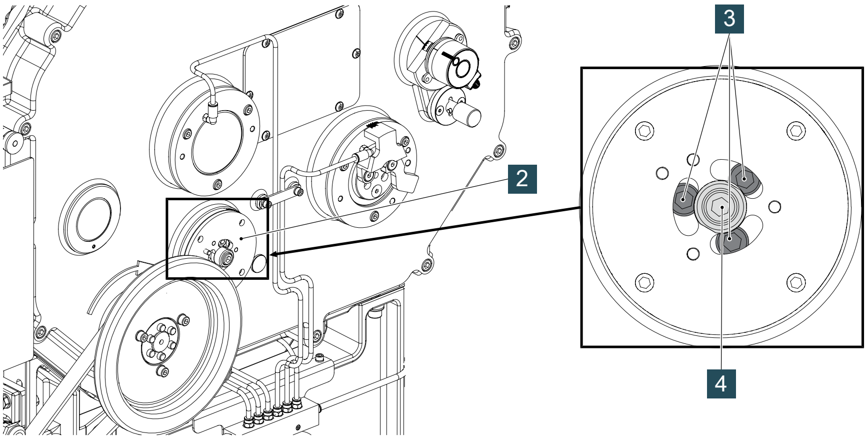


Figure 476: Control disk

6. Turn the 3 screws 3 continuously until the control disk 2 becomes disconnected.

   ⇨ The distance D between the control disk 2 and the scale ring 7 is not more than 2.5 mm.

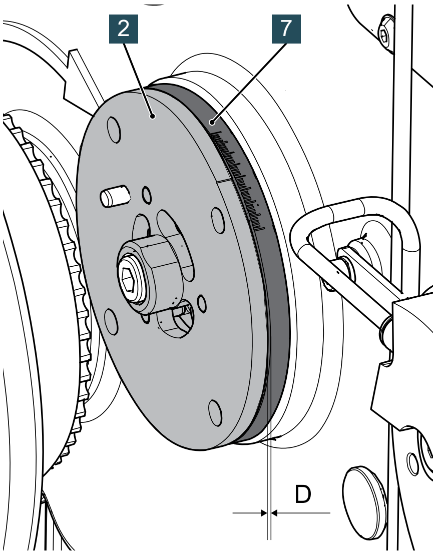


Figure 477: Control disk setting

7. The control disk 2 is possible to be changed.
8. Attach an open-end wrench no. 24 to the flat surfaces of the hub 4.
9. Record the mark 5 on the scale 6.

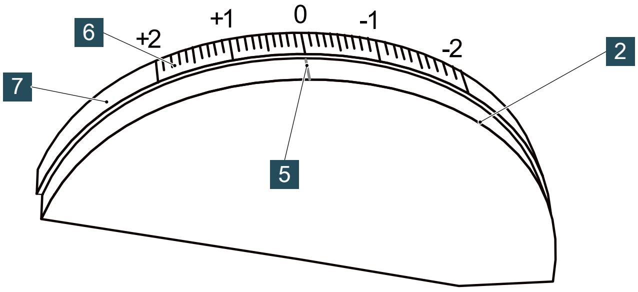


Figure 478: Scale mark on the control disk

10. Move the control disk 2 in small treads with the open-end wrench no. 24.
11. Tighten the screws 3 with a tightening torque of 40 Nm.
12. Remove all tools.
13. Unlock the index-locking pin 1.

Result The control disk is set.

7.9.2.6 Measuring the Sliver Evenness

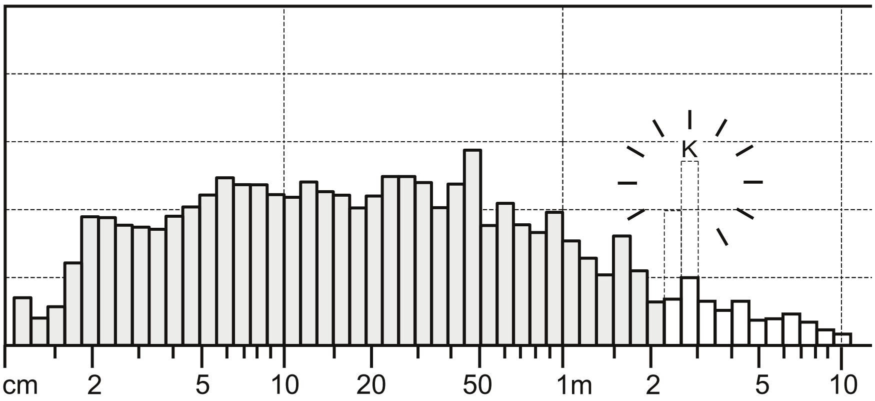


Figure 479: Spectrogram of the sliver evenness

1. Measure the sliver evenness on the finisher in the laboratory.
   ⇨ The measured results are shown in a spectrogram.
2. If a peak occurs in the spectrogram of the finisher, do the steps that follow.
3. Increase the pressure for the top detaching roller.
4. Increase the pressure for the drafting system.
5. Set the break draft.
6. Set the table funnel.
7. Set the funnel at the calender rollers of the drafting system.
8. Set the sliver coiling.

9. Decrease the penetration depth of the top combs.
10. Set the suction.
11. Align the sliver guides equally on the doubling table.
12. Set the piecing again.

Result The sliver evenness is measured.

7.9.2.7 Selecting the Highest Nipping Rate

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.

1. Increase the nipping rate gradually.
2. Check the operating behavior and the quality at each step.
3. Set the nips for each minute.

Result The highest nipping rate is selected.

7.9.3 ROBOlap

This chapter contains the information about the settings of the ROBOlap.

7.9.3.1 Setting the Machine Type of the ROBOlap

Before the machine is used, to make sure that the parameters related to the ROBOlap are shown in the data screen, the option **ROBOlap** at **Machine type** is to be selected.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ The data screen shows the advanced display.

1. Go the data screen 1.1 **Basic configuration**.
2. Select the option **Yes** in the field **ROBOlap**.

Result The machine type of the ROBOlap is set.

7.9.3.2 Setting the ROBOlap Steps

Before the machine is used, the applicable steps of the ROBOlap are to be set to make sure that the machine operates correctly.

The chapter **Machine Operating Unit** is to be referred to do the settings.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ The data screen shows the advanced display.

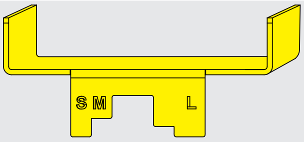
1. Go to the data screen 1.7 ROBOlap.

2. Set the parameters in accordance with the current situation in the data screen 1.7.1 ROBOlap 1, the data screen 1.7.2 ROBOlap 2, and the data screen 1.7.3 ROBOlap 3.

Result The ROBOlap steps are set.

7.9.3.3 Setting the Top Position of the Batt Suction Unit (with ROBOlap)

Fiber Length	Side to use
≤ 27.5 mm	SM
≥ 27.5 mm	L

Tool	Tool Name	Function Description
	Distance gauge	This distance gauge is used to set the batt suction unit of the ROBOlap.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ A distance gauge is to be used.

1. Select the operating mode **Service** in the advanced display.
2. Increase the batt vacuum in the field **Minimum vacuum in batt suction duct** in the data screen 1.7.4 ROBOlap 4.
3. To select the side of the distance gauge, refer to the table that is shown before.
4. To lift the batt suction unit, tap the key **Lift** in the field **Batt suction unit** in the data screen 7.1.7.2 ROBOlap 2.
5. Put the distance gauge between the lap rollers 1 and 2.

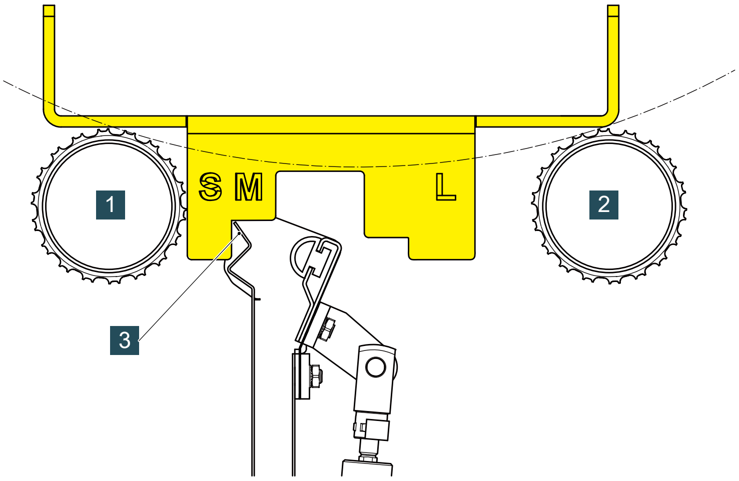


Figure 480: Distance gauge and lap rollers

6. Push the distance gauge to the rear lap roller 1.
7. Check the position of the edge 3.
8. If the edge 3 is not at the stop SM or L of the distance gauge as shown in the figure, set the vertical position of the batt suction unit.

Setting the Vertical Position of the Batt Suction Unit

1. Set the distance A with the screw 4 until the batt suction unit is at the stop of the distance gauge.

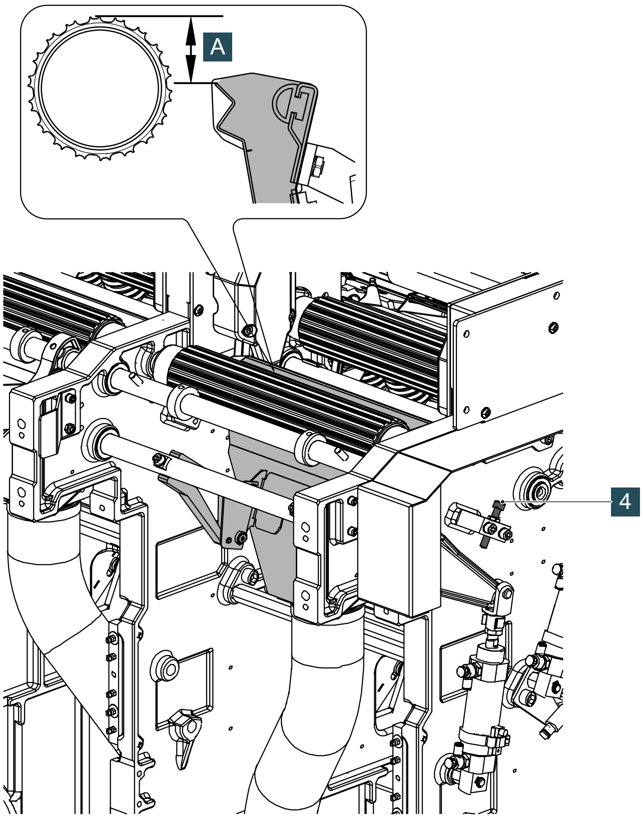


Figure 481: Vertical position of the batt suction unit

2. Check the distance A at the 1st combing unit and the 8th combing unit.

Setting the Horizontal Position of the Batt Suction Unit

1. Loosen the screw 5.

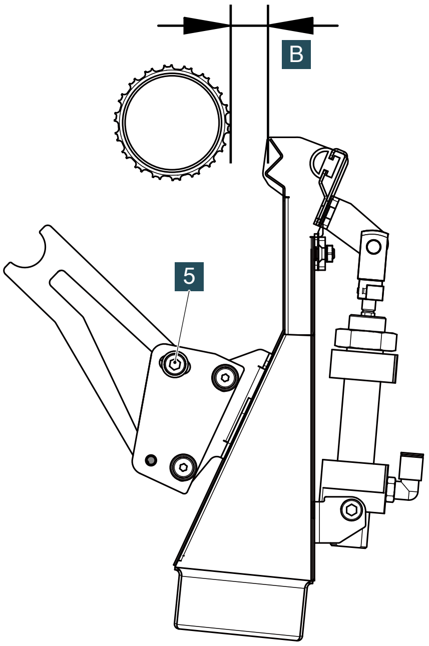


Figure 482: Horizontal position of the batt suction unit

2. Set the distance B until the batt suction unit is at the stop of the distance gauge.
3. Tighten the screw 5.
4. Check the distance B at each combing unit.
5. Select the option in the field **Batt suction unit Top position | Fiber length** in the data screen 1.7.4 ROBOlap 4 in accordance with the used distance gauge.

Result The top position of the batt suction unit is set.

7.9.3.4 Setting the Bottom Position of the Batt Suction Unit (with ROBOlap)

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Select the operating mode **Service** in the advanced display.
2. To lower the batt suction unit, tap the key **Lower** in the field **Batt suction unit** in the data screen 7.1.7.2 ROBOlap 2.
3. If the fiber length is ≤ 27.5 mm, set the distance C to 65 mm.

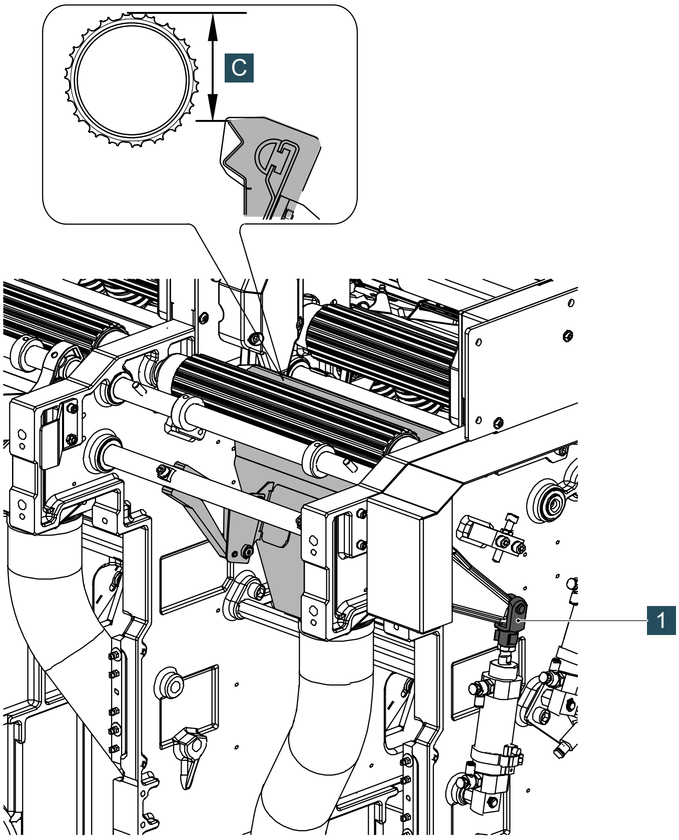


Figure 483: Bottom position of the batt suction unit

4. If the fiber length is ≥ 27.5 mm, set the distance C to 70 mm.
5. Hold the fork head 1.
6. Measure the distance C on the 1st combing unit and the 8th combing unit with a straightedge and a scale.

Result The bottom position of the batt suction unit is set.

7.9.3.5 Setting the Width of the Batt Clamp Opening (with ROBOlap)

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Select the **Service** mode in the operating unit.
2. To open the batt clamp, tap the key **Open** in the field **Batt clamp** in the data screen 7.1.7.2.
3. Set the distance D to 17 mm.

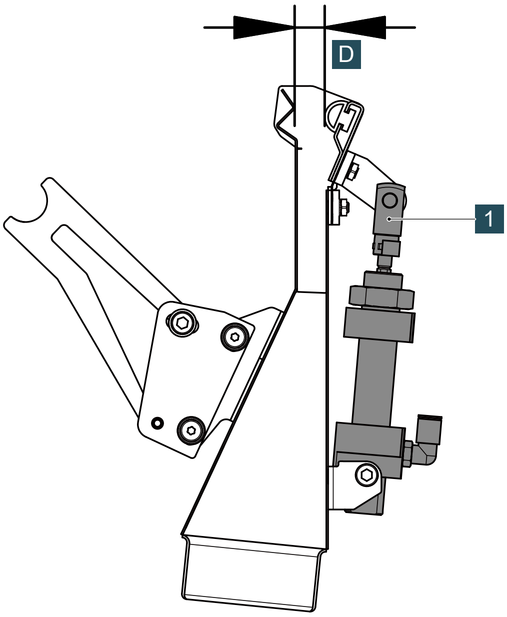


Figure 484: Batt clamp opening

4. Hold the fork head 1.
5. Measure the distance E with a feeler gauge.

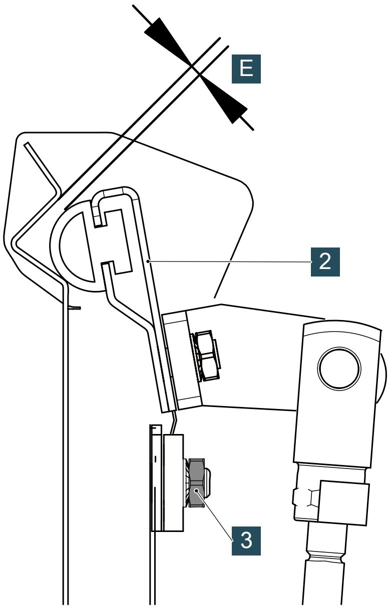


Figure 485: Nipping lip

6. If the distance E is not between 0.3 and 0.5 mm, do the steps that follow.
7. Loosen the nut 3.
8. Align the nipping lip 2 until the distance E is between 0.3 and 0.5 mm.

9. Tighten the nut 3.
10. measure the distance E again.

Result The width of the batt clamp opening is set.

7.9.3.6 Setting the Top and Bottom Position of the Aeropic (with ROBOlap)

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ The end position damping is set.
- ✓ The magnetic switch is set.

1. Select the service mode in the operating unit.
2. To move up and down the Aeropic, tap the key **Lift** and **Lower** at the field **Aeropic** in the data screen 7.1.7.1.

   ⇨ The pneumatic cylinder 3 extends and retracts.

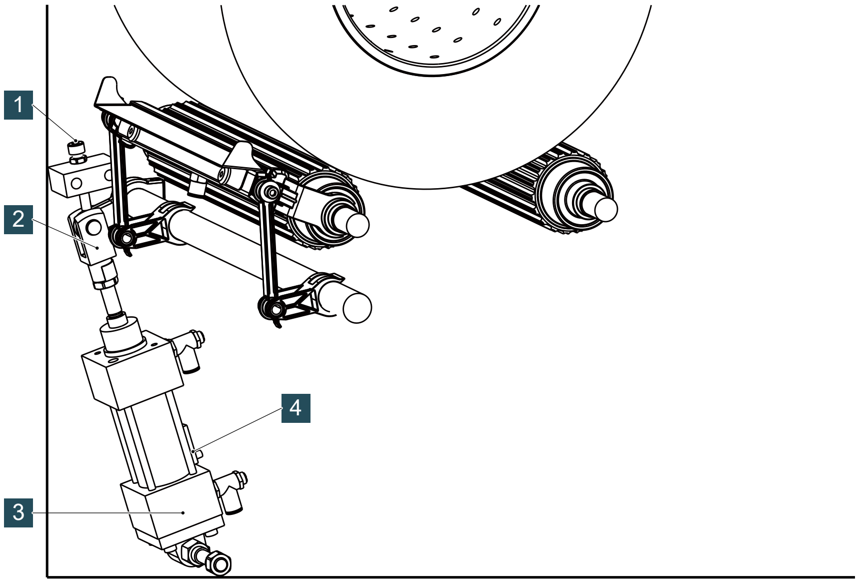


Figure 486: Aeropic

3. Set the distance Y at the fork head 2 to the range from 2 to 4 mm.

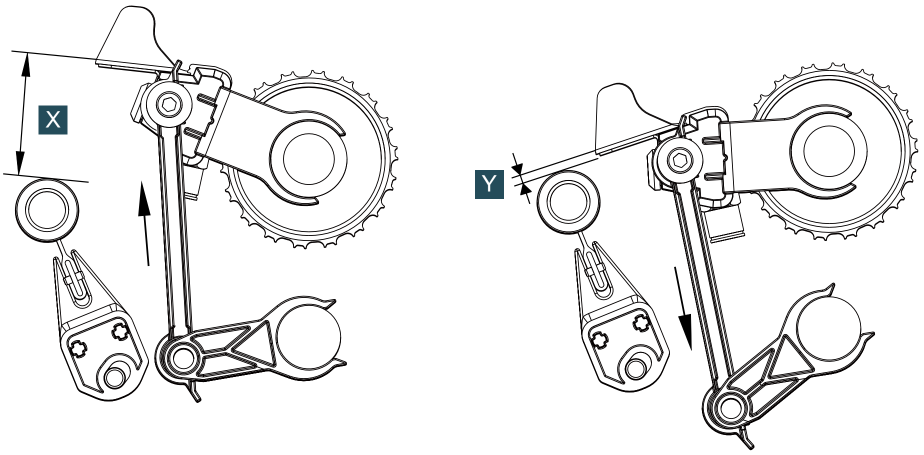


Figure 487: Top position and bottom position of the Aeropic

4. Move the magnetic switch 4 until the LED at the magnetic switch is on.
5. Attach the magnetic switch 4.
6. Set the distance X at the limit stop 1 to approximately 54 mm.

Result The top and bottom position of the Aeropic are set.

7.9.4 Setting the Shifts

The basic shift settings are possible to be done in the data screen 8.2.1 (*refer to ▸ 271*).

The shift schedule is possible to be set in the data screen 8.2.2 (*refer to ▸ 272*).

7.9.5 Pneumatic Pressure

This chapter contains the information about how to set the pneumatic pressure.

7.9.5.1 Setting the Pressure Range

1. Pull up the pressure setting screw 1.

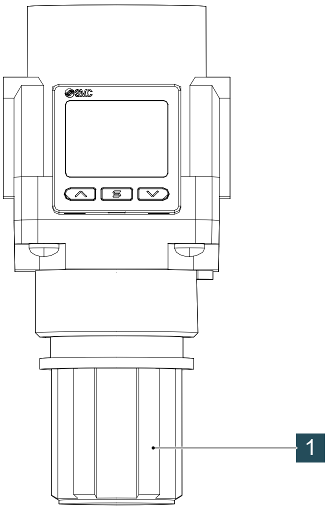


Figure 488: Pressure setting screw

2. To adjust the pressure, turn the screw 1.
   - ⇨ The pressure increases if the screw 1 is turned clockwise.
   - ⇨ The pressure decreases if the screw 1 is turned counterclockwise.
3. To set the pressure to the necessary value, test the test key.
   - ⇨ The value of the pressure is shown at the pressure gauge.
4. Push down the screw 1.

Result The pressure range is set.

7.9.5.2 Setting the Pressure That Is Applied to the Top Detaching Rollers

Pressure That Is Applied to the Top Detaching Rollers	
Setting range	2 – 5 Bar
Guide value	2.5 Bar
Maximum value	≤ 5 Bar

Pressure That Is Applied to the Top Detaching Roller	
Fiber length < 27.5 mm	The pressure is in the upper range.
Fiber length: 27.5 – 34 mm	The pressure is in the middle range.
Fiber length > 34 mm	The pressure is in the middle range.

1. To set the single pressure range, refer to the table that is shown before.
2. Make sure that the load is sufficient to prevent an un-drafted web.
3. If the batt weight is high, increase the pressure in the data screen 1.5.2.
4. If the noil extraction is low, increase the pressure in the data screen 1.5.2.

5. If the top roller cots are worn, increase the pressure in the data screen 1.5.2.

Result The pressure that is applied to the top detaching rollers is set.

7.9.5.3 Setting the Pressure That Is Applied to the Aeropic (with ROBOlap)

The pressure that is applied to the Aeropic has an effect on the injector power at the Aeropic.

Pressure That Is Applied to the Aeropic	
Setting range	3.5 – 4 Bar

1. Set the pressure for the Aeropic in accordance with the setting range that is shown before with the pressure valve (*refer to ▸ 412*).

Result The pressure that is applied to the Aeropic is set.

7.9.5.4 Opening the Primary Valve of the Compressed Air

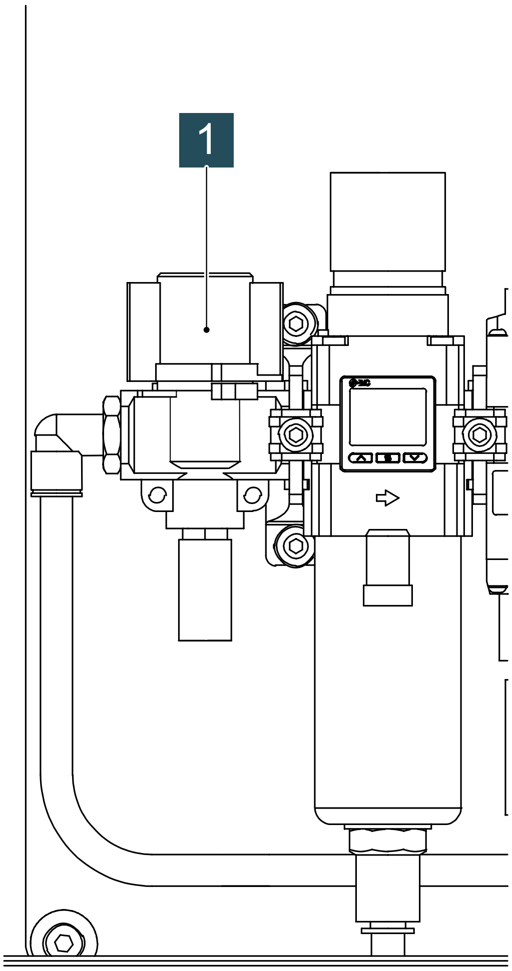


Figure 489: Primary valve of the compressed air

1. Turn the stop valve 1 to a horizontal position.

Result The primary valve of the compressed air is opened.

7.9.6 Suction

This chapter contains the information about how to set the suction.

7.9.6.1 Setting the Table Funnel

Prerequisites Make sure that the criteria are obeyed:

- ✓ The percentage of the noil extraction is set.
- ✓ The feed distance is set.
- ✓ The top comb is installed.

1. Install the table funnel with the applicable diameter D on 1 combing unit.

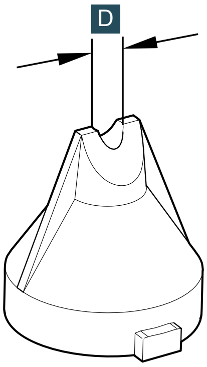


Figure 490: Table funnel

2. Put the web into the installed table funnel.
3. Start the machine for some seconds.
4. Check the work condition of the table.
5. If the table is pushed up, install the table funnel with a smaller diameter.

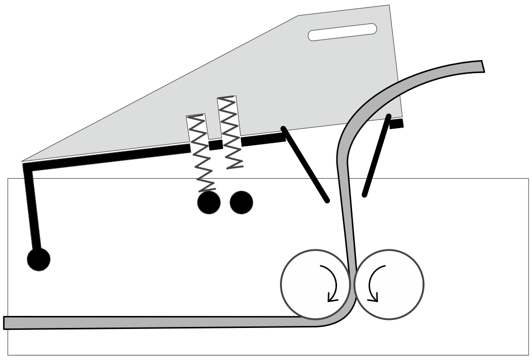


Figure 491: Funnel diameter is too large

6. If the table is pushed down, install the table funnel with a larger diameter.

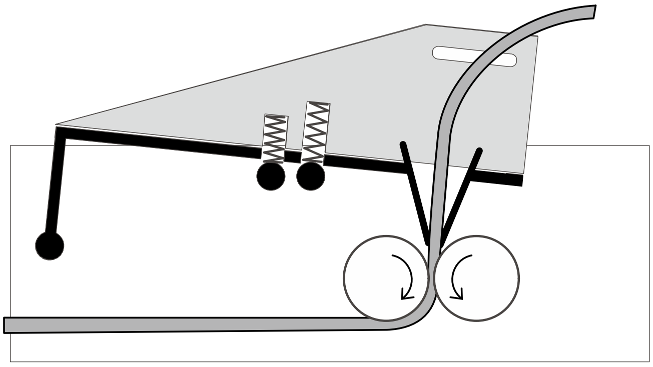


Figure 492: Funnel diameter is too small

7. Make sure that the table is horizontal during the production.

Result A table funnel is set.

7.9.6.2 Setting the Suction Value (with ROBOlap)

Suction Value for the ROBOlap	
Static Vacuum	**Suction Rate**
Static vacuum: 1200 Pa	0.5 m³/s

Prerequisites Make sure that the criteria are obeyed:

✓ Air requirement in the entire piping system is in the same condition during the production.

1. To open the suction flap, tap the key **Open** in the field **Batt suction duct** in the data screen 7.1.7.4.
2. To open the batt clamping flap at the batt suction unit, tap the key **Open** in the field **Batt clamp** in the data screen 7.1.7.2.
3. Measure the suction value at the measuring hole 1 of the machine connection point.

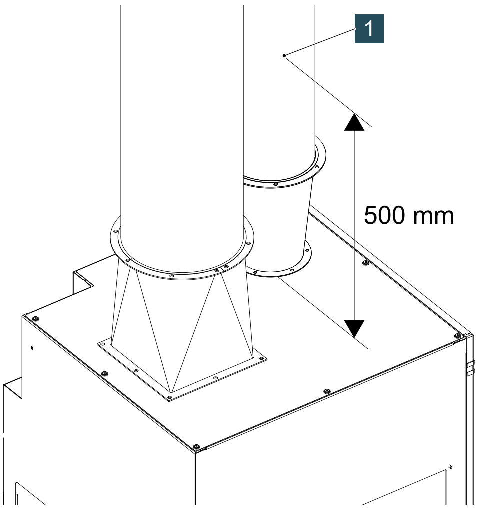


Figure 493: Measuring hole

4. Measure the static vacuum at the measuring hole 1 with the U-tube 3.

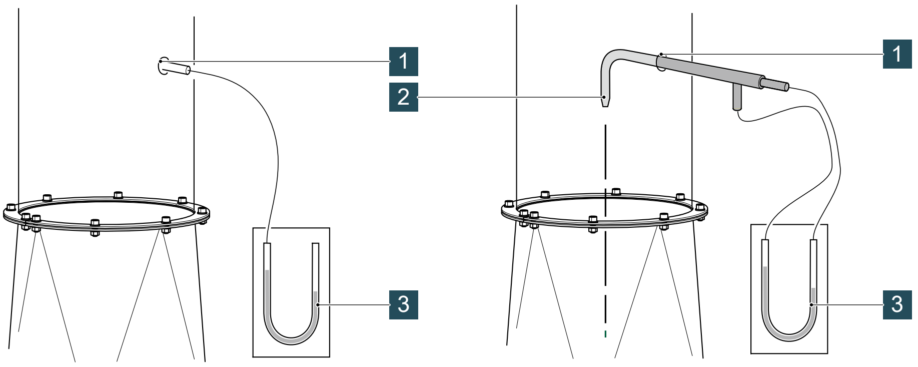


Figure 494: Measurement of vacuum

5. Put the end of the Pitot tube 2 at the center position of the suction tube.
6. Measure the dynamic vacuum with the Pitot tube 2.
7. If the vacuum is lower than the vacuum standard in the table that is shown before, increase the suction value at the external aggregate.
8. If the vacuum is higher than the vacuum standard in the table that is shown before, decrease the suction value at the reducer slider of the machine connection.

Result The ROBOlap suction value is set.

7.9.6.3 Setting the Noil Extraction Value

Suction Value for the Exhaust Air and Noil	
Static suction	300 Pa (1 m^3/s)
Dynamic suction	125 Pa (1 m^3/s)

Prerequisites Make sure that the criteria are obeyed:

- ✓ The air requirement in the entire piping system is in the same condition during the production.

1. Close all the covers of the fly duct.
2. Measure the static vacuum at the measuring hole 1 with the U-tube 3.

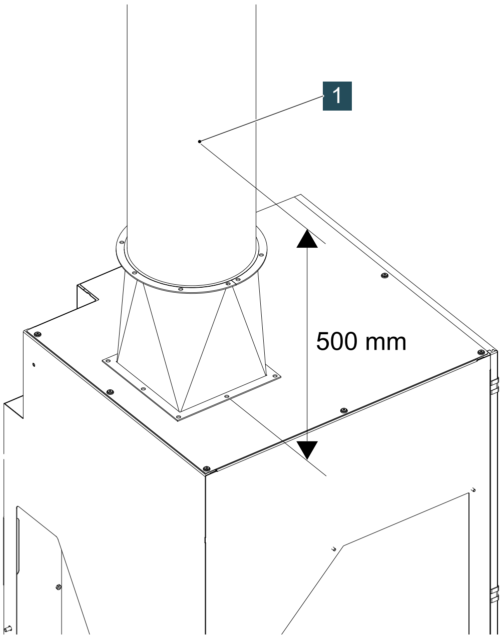


Figure 495: Suction tube (upward)

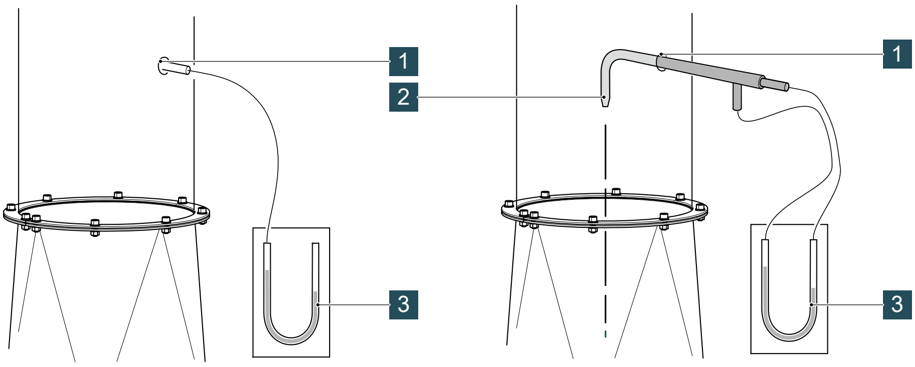


Figure 496: Measurement of vacuum (upward)

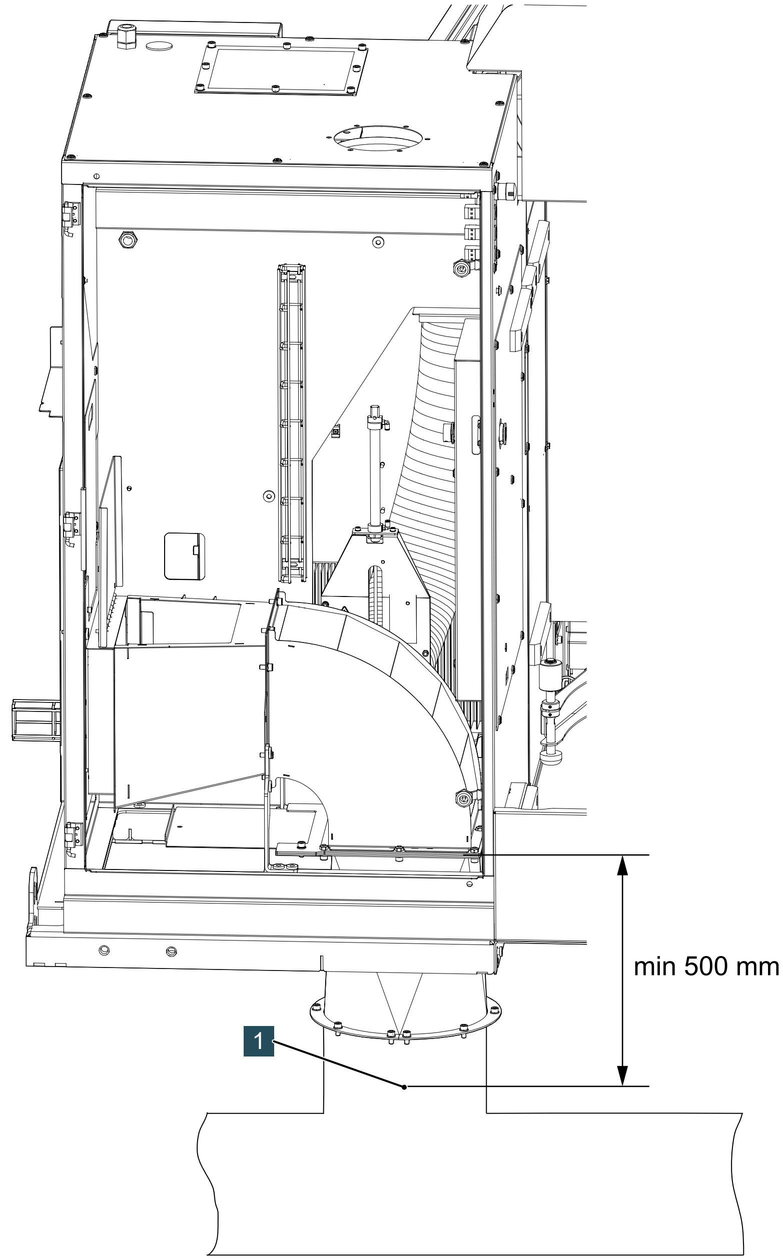


Figure 497: Suction tube (downward)

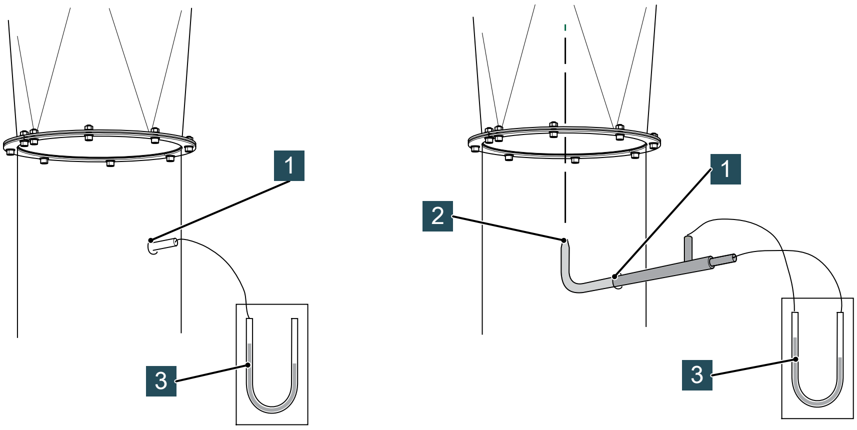


Figure 498: Measurement of vacuum (downward)

3. Put the end of the Pitot tube 2 to the center position of the suction tube.
4. Measure the dynamic vacuum with the Pitot tube 2.
5. If the vacuum is lower than the vacuum standard in the table that is shown before, increase the suction value at the external aggregate.
6. If the vacuum is higher than the vacuum standard in the table that is shown before, decrease the suction value at the reducer slider of the machine connection.

Result The noil extraction value is set.

7.9.6.4 Setting the Suction in the Fly Duct

Fiber Length	Suction
< 27.5 mm	160 – 180 Pa
27.5 – 34 mm	150 – 170 Pa
> 34 mm	140 – 160 Pa

1. Open the pneumatic flap 1.

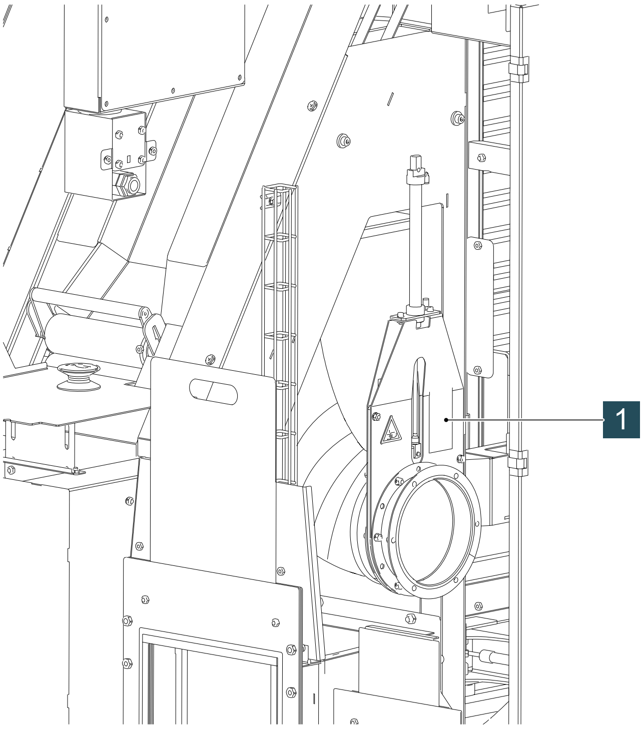


Figure 499: Fly duct

2. Check the suction rate.
3. Close all fly duct covers 2.

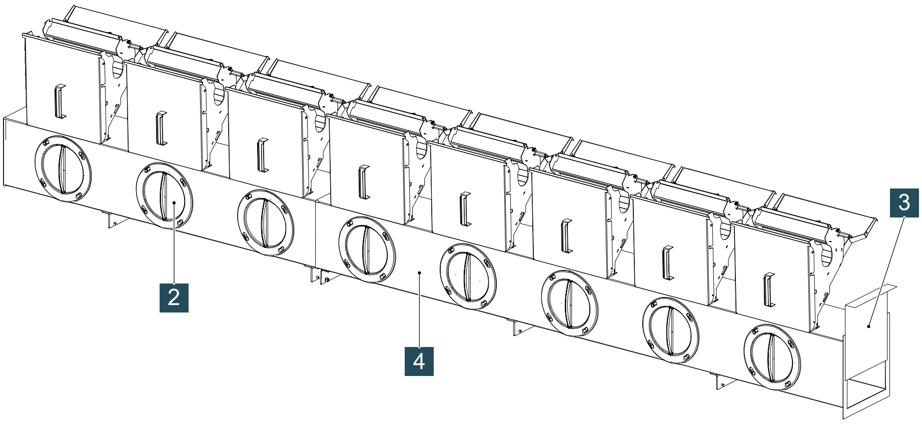


Figure 500: Setting of the suction

4. Open the slider 3 for the fly duct 4 fully.

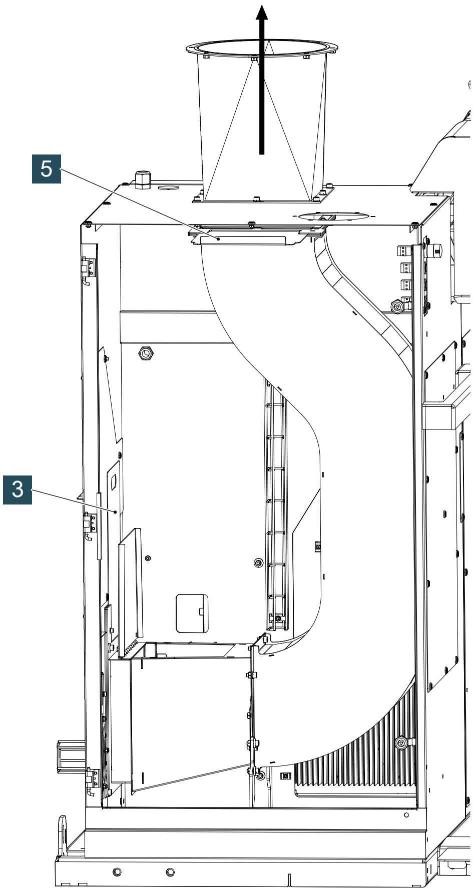


Figure 501: Sliders of the suction (upwards)

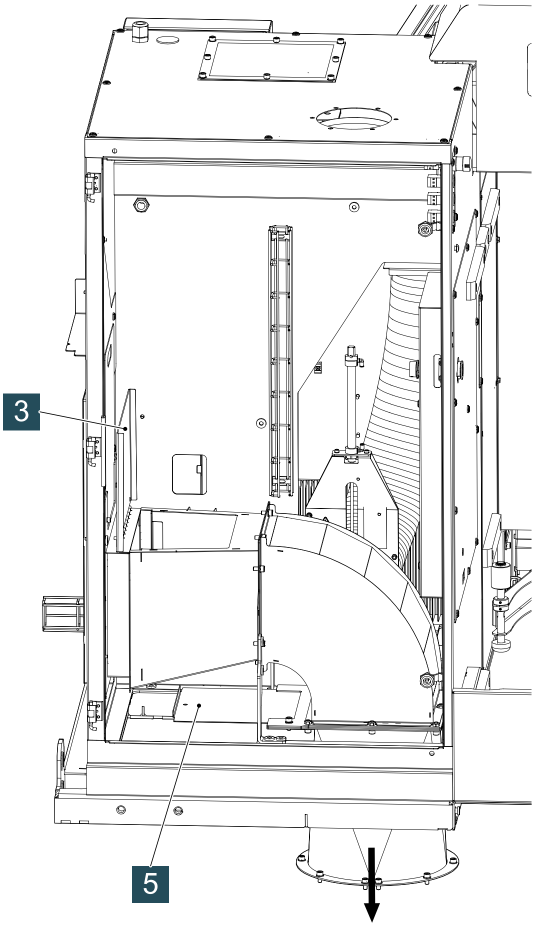


Figure 502: Sliders of the suction (downwards)

5. Adjust the slider 5 at the machine connection point until the current vacuum is 200 Pa.

   ⇨ The vacuum that shows in the data screen of simple mode or the data screen 7.2.2 is 200 Pa.

6. To adjust the vacuum in the fly duct 4, adjust the slider 3 until the vacuum is in accordance with the value in the table that is shown before.

Result The suction in the fly duct is set.

7.9.6.5 Setting the Suction for the Drafting System

Usually the slider 1 is possible to keep fully open. If the vacuum for the drafting system is to be adjusted, the vacuum is possible to be adjusted with the slide 1.

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Open the suction box door at the delivery unit.
2. Loosen the screws 2.

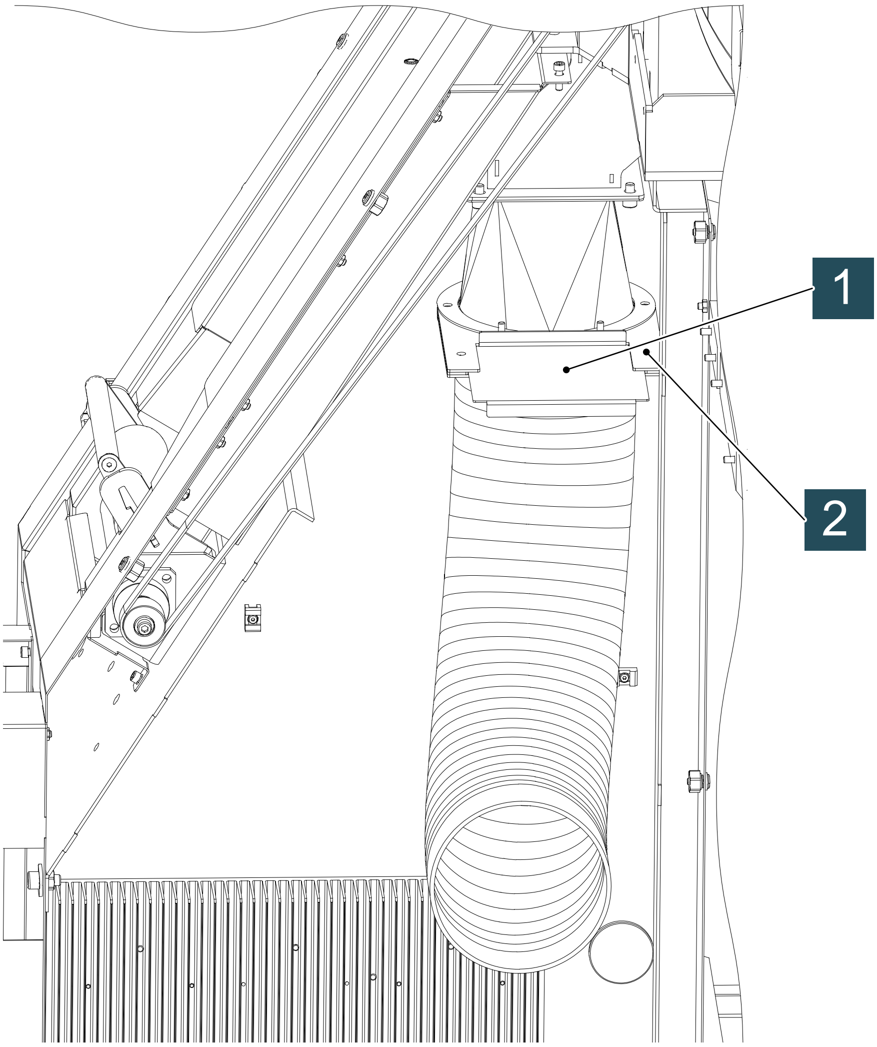


Figure 503: Pusher

3. To adjust the vacuum for the drafting system, adjust the slider 1.
4. Tighten the screws 2.
5. Unlock the main switch and start the machine.
6. Check the vacuum.

   ⇨ The vacuum is at the necessary value.
7. Close the suction box door at the delivery unit.

Result The suction of the drafting system is set.

7.9.7 Drafting System

This chapter contains the information about how to adjust the drafting system

7.9.7.1 Setting the Overlap Stop Motion of the Top Roller

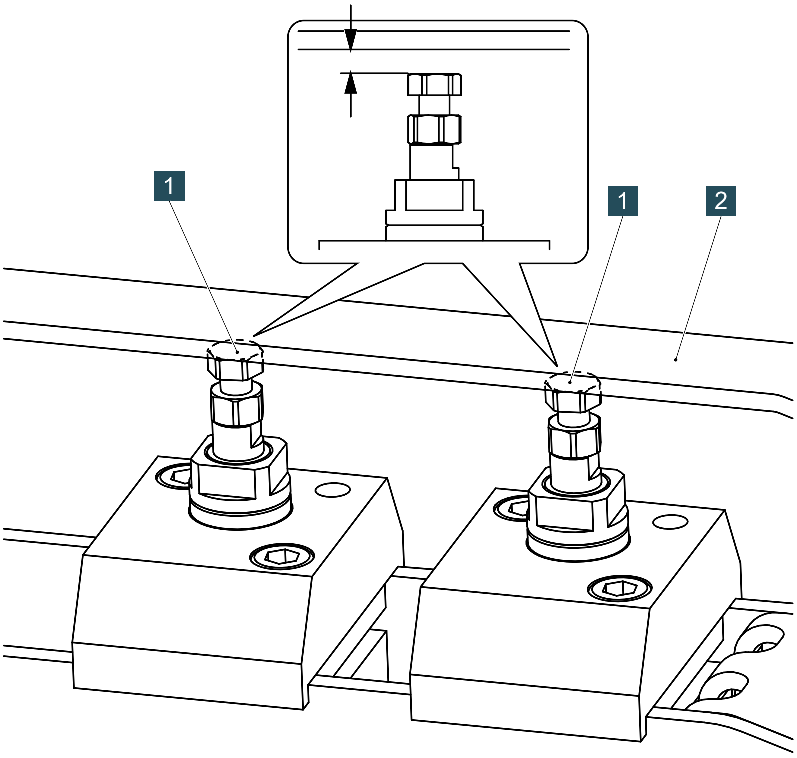


Figure 504: Contact screws and the contact strip

Set the distance between the contact screws 1 and the contact strip 2 to the smallest value that is applicable for the web. The results that are caused by an incorrect distance are as follows:

- If the distance is too small, the machine stops without a lap formation.
- If the distance is too large, the machine does not stop or stops too late. This causes damage to the drafting system.

7.9.7.2 Setting the Overlap Stop Motion of the Feed Roller and Middle Roller

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ The drafting system has material inside.

1. Put the web into the drafting system.
2. Loosen the nuts 3.

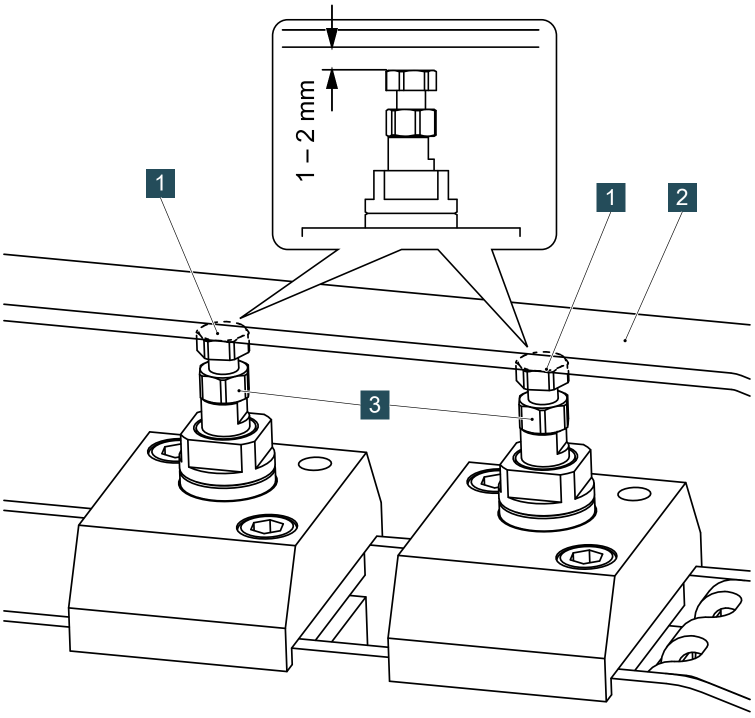


Figure 505: Contact screws and the contact strip

3. Set the distance between the contact screws 1 and the contact strip 2 to the value that is applicable for the web. Recommendation: 1 – 2 mm.
4. Set the distance on both sides of the feed roller and the middle roller.
5. Tighten the nuts 3.

Result The overlap stop motion of the feed roller and middle roller is set.

7.9.7.3 Setting the Overlap Stop Motion of the Delivery Roller

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ The drafting system has material inserted.

1. Put the web into the drafting system.
2. Loosen the nuts 3.

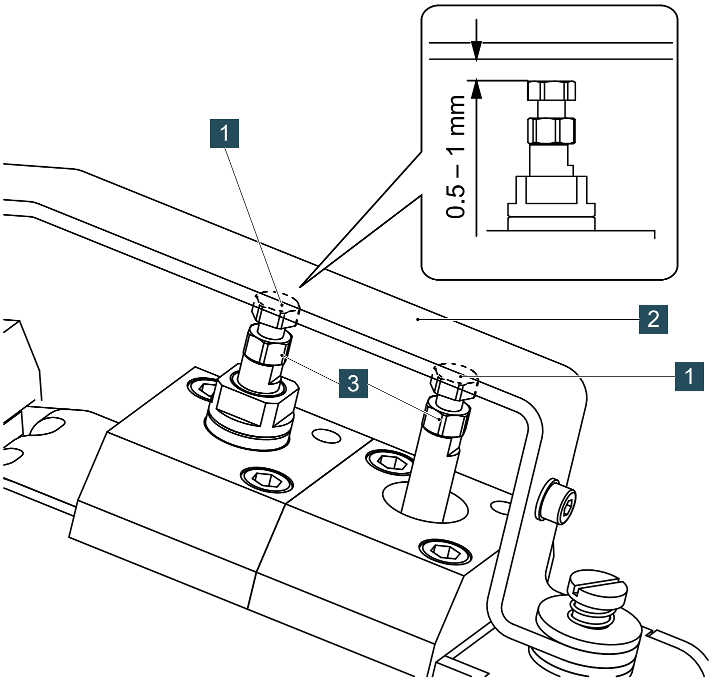


Figure 506: Contact screws and contact strip

3. Set the distance between the contact screws 1 and the contact strip 2 to the value that is applicable for the web. Recommendation: 0.5 – 1 mm.
4. Set the distance on both sides of the delivery roller.
5. Tighten the nuts 3.

Result The overlap stop motion of the delivery roller is set.

7.9.7.4 Setting the Clearer Lips of the Top Rollers

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ The raw material is put into the machine.

1. Open the drafting system hood.
2. Remove the coupling arm 2 from the ball catch 1 at the suction head 3.

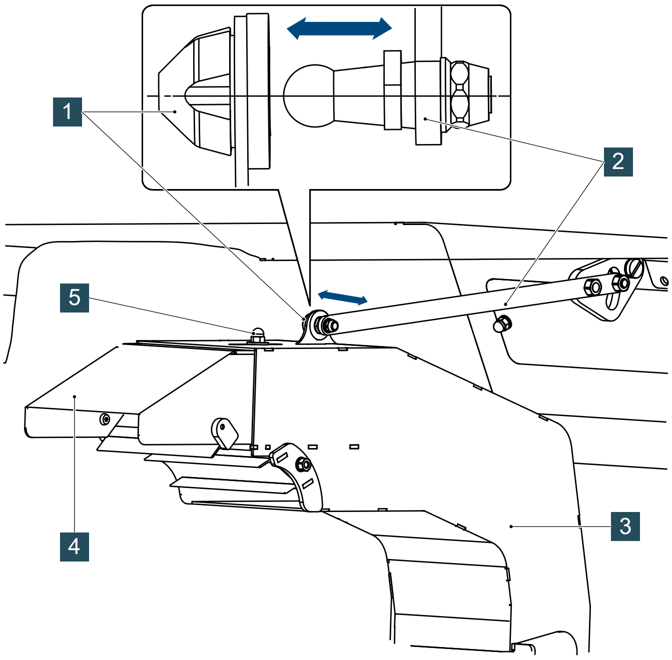


Figure 507: Movable duct

3. Remove the cap nut 5.
4. Remove the movable duct 4.
5. Turn the rotary switch to the position II and release the rotary switch.
   ⇨ Load is applied to the drafting system.
6. Check from the front if the clearer lip 6 touches the delivery top roller 9 lightly.

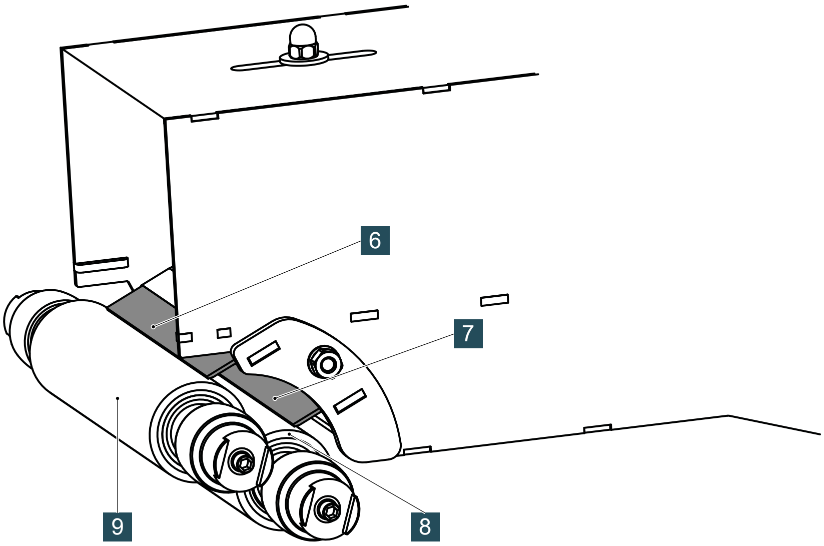


Figure 508: Clearer lips of the top roller

7. Check from the side if the clearer lip 7 touches the deflection top roller 8 lightly.
8. If the clearer lips do not touch the rollers correctly, loosen the lock nut 10 on the right side of the suction head.

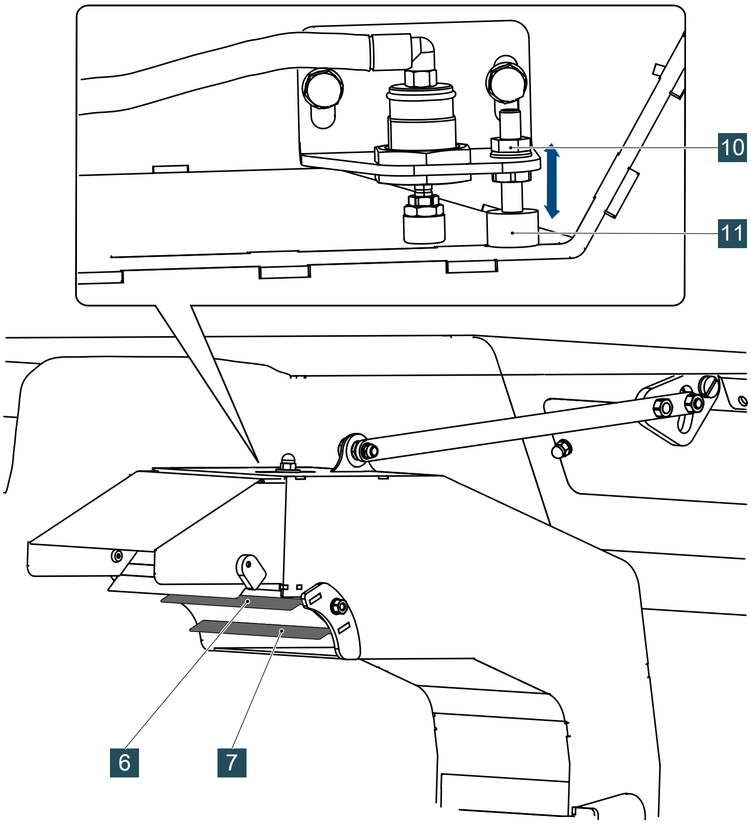


Figure 509: Clearer lips

9. To set the position of the clearer lips 6 and 7, use the adjusting screw 11.
10. Tighten the lock nut 10.
11. Put the movable duct 4 in the correct position.

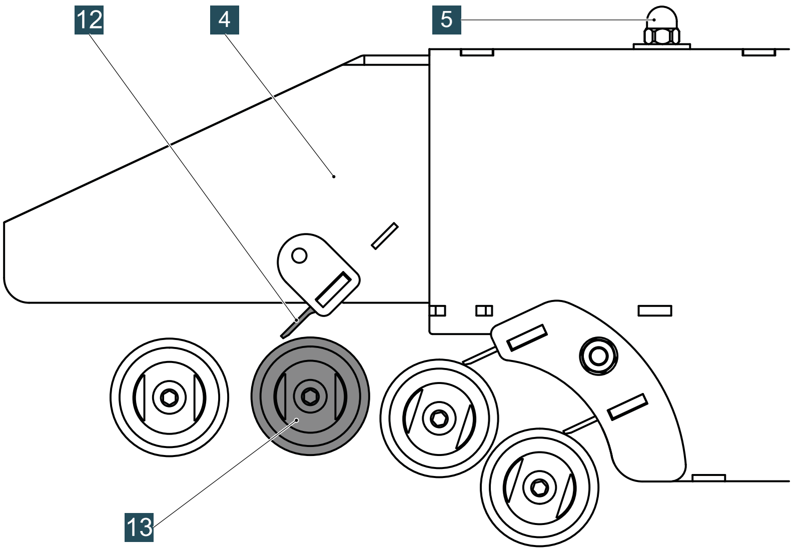


Figure 510: Movable duct

12. Install the cap nut 5 loosely.
13. Turn the rotary switch to the position II and release the rotary switch.
    ⇨ Load is applied to the drafting system.
14. Pull out the movable duct 4 until the clearer lip 12 is correctly put at the middle top roller 13.
15. Tighten the cap nut 5.
16. Put the ball pin at the coupling arm 2 into the ball catch 1.

Result The clearer lips of the top rollers are set.

7.9.8 Rieter Quality Monitor (RQM)

The standard quality sensor monitors the sliver width between the delivery disks.

The RQM sensor has the functions that follows:

- A % monitoring
- CV % monitoring
- Spectrogram monitoring
- Thick places monitoring

7.9.8.1 Setting the Shut-off Limit Value of A % (RQM)

1. To set the shut-off limit values of A %, enter the value in the field **Limit for A % monitoring** in the data screen 2.4.1.

Result The shut-off limit value of A % is set.

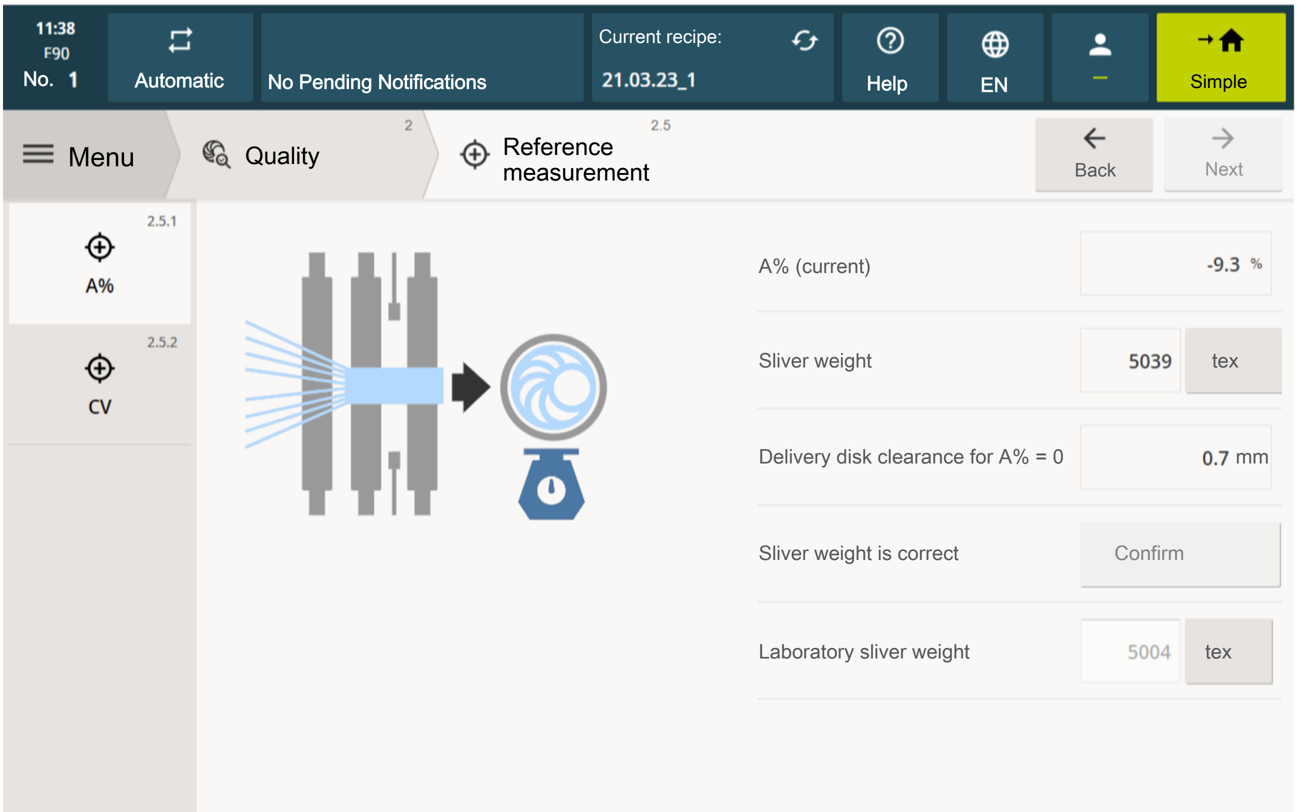
7.9.8.2 Setting the Shut-off Limit Value of Thick Places (RQM)

1. To set the shut-off limit values of thick places, enter the related value in the data screen 2.4.2.

Result The shut-off limit value of thick places is set.

7.9.8.3 Doing the Reference Measurement of Delivery Disks (RQM)

When the raw material is changed or the delivery disks are calibrated, the reference measurement of delivery disks is necessary to be done. After this procedure, the sliver weight of the delivered sliver is able to be measured.


11:38
F90
No. 1
Automatic
No Pending Notifications
Current recipe:
21.03.23_1
Help
EN
Simple
Menu
Quality
2
2.5
Reference measurement
Back
Next
2.5.1
A%
2.5.2
CV

A% (current) -9.3 %

Sliver weight 5039 tex

Delivery disk clearance for A% = 0 0.7 mm

Sliver weight is correct Confirm

Laboratory sliver weight 5004 tex

Figure 511: Data screen 2.5.1 A%

Prerequisites Make sure that the criteria are obeyed:

- ✓ The safety distance of the delivery disks is set (*refer to ▸ 356*).
- ✓ The RQM sensor is set (*refer to ▸ 360*).
- ✓ The delivery disks are calibrated (*refer to ▸ 362*).

1. Set the target sliver weight in the data screen 1.3.5.
2. Go to the data screen 2.5.1.
3. Start the machine.
4. Tap the key **Confirm**.
5. Weight the produced sliver in the laboratory.

6. If the laboratory sliver weight is different from the target sliver weight, enter the measured sliver weight in the field **Laboratory sliver weight**.

   ⇨ The current A% value is shown in the field **A% (current)**.

Result The reference measurement of delivery disks is done.

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8 Troubleshooting

This chapter contains information about fault causes and remedies for:

- Faults that have fault codes
- Faults that do not have fault codes
- Material-specific faults

More information about the electric devices and pneumatic devices is to be found in the electrical documentation.

8.1 Troubleshooting Personnel

Only Rieter-approved personnel are permitted to do troubleshooting work at the machine.

8.2 About the Fault Message Lists

All faults with fault codes that are shown on the operating unit are recorded in a numbered fault message list.

The fault message list helps to correct faults that occur during machine operation.

A fault message list contains 6 columns. The columns contain the information that follows:

Table Header	Explanation
Fault code	The fault code is the number to identify a fault.
Location	The figure shows at which position the fault occurs at the machine.
Fault symbol	The fault symbol shows the type or the source of the fault with a figure.
Fault text	The fault text gives a short description of the fault.
Fault cause	The fault cause shows the condition that started the fault. 1 cause or more causes are possible.
Remedy	The remedy shows alternatives on how to correct the fault.

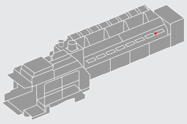
The machine shows different alarm levels on the operating unit. Different alarm levels cause different machine reactions.

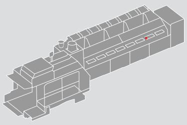
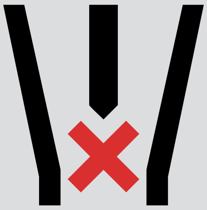
Alarm Level	Fault Icon	Impact on the Production	Explanation
Alarm	⊗	The production stops.	An alarm immediately stops the production. An operator intervention is necessary. The production is not possible to be started until the fault is repaired. The signal lamp is on.

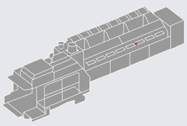
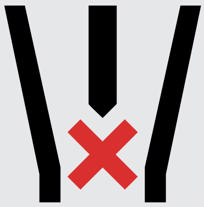
Alarm Level	Fault Icon	Impact on the Production	Explanation
Warning message	⚠	The production continues.	The production does not immediately decrease. An operator intervention must come after immediately to prevent that the production decreases or stops. The signal lamp is off or flashes in relation to the fault cause. A warning message can always become an alarm.
		The production stops.	The warning message gives only information that the machine waits to continue with an automatic procedure. An operator intervention is not necessary. The signal lamp is off.
Information		The production continues.	The operator gets information about the condition of the machine or an assembly.

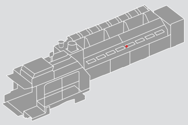
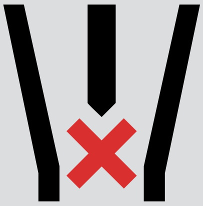
Data in curly parentheses {…} are placeholders for a number or a text in the fault message that is adapted to the situation.

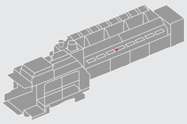
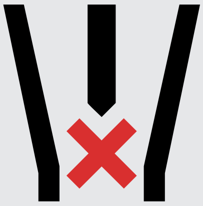
8.3 Faults with Fault Code

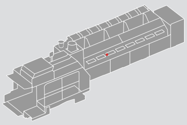
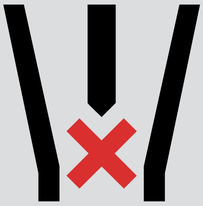
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1001			Table funnel 1	B111	--
				The fleece is smooth.	– Adapt the table funnel (*refer to* ▸ *415*). – Remove the table funnel (*refer to* ▸ *506*).

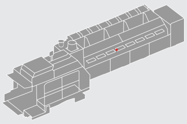
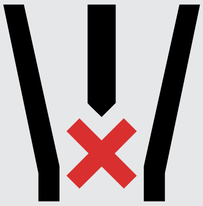
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				The circular comb is dirty or clogged with cotton. The meshing depth of the circular-comb brush is not sufficient.	– Do a check of the meshing depth of the circular-comb brush. – Set the meshing depth of the circular-comb brush (*refer to ▸ 557*).
				The top comb is not put.	Put the top comb (*refer to ▸ 566*).
				The top comb is dirty and clogged.	Clean the top comb (*refer to ▸ 507*).
				The feed trough plate is 1-sided.	Set the feed trough plate (*refer to ▸ 579*).
				The type of the nipper feed roller is not applicable with the detaching distance.	Make sure that you use the right type of feed to get your noil percentage (*refer to ▸ 307*).
				The drive for the nipper feed roller is not reliable.	– Adapt the eccentric shaft at the central setting mechanism (*refer to ▸ 313*). – Tighten the ratchet wheels (*refer to ▸ 304*).
				The pressure of top detaching roller is too low.	Set the pressure of top detaching rollers (*refer to ▸ 413*).
1002			Table funnel 2	B112	--
				The fleece is smooth.	– Adapt the table funnel (*refer to ▸ 415*). – Remove the table funnel (*refer to ▸ 506*).

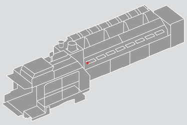
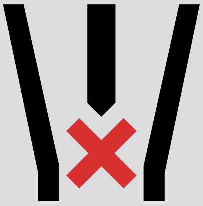
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				The circular comb is dirty or clogged with cotton. The meshing depth of the circular-comb brush is not sufficient.	– Do a check of the meshing depth of the circular-comb brush. – Set the meshing depth of the circular-comb brush (*refer to* ▸ *557*).
				The top comb is not put.	Put the top comb (*refer to* ▸ *566*).
				The top comb is dirty and clogged.	Clean the top comb (*refer to* ▸ *507*).
				The feed trough plate is 1-sided.	Set the feed trough plate (*refer to* ▸ *579*).
				The type of the nipper feed roller is not applicable with the detaching distance.	Make sure that you use the right type of feed to get your noil percentage (*refer to* ▸ *307*).
				The drive for the nipper feed roller is not reliable.	– Adapt the eccentric shaft at the central setting mechanism (*refer to* ▸ *313*). – Tighten the ratchet wheels (*refer to* ▸ *304*).
				The pressure of top detaching roller is too low.	Set the pressure of top detaching rollers (*refer to* ▸ *413*).
1003			Table funnel 3	B113	--
				The fleece is smooth.	– Adapt the table funnel (*refer to* ▸ *415*). – Remove the table funnel (*refer to* ▸ *506*).

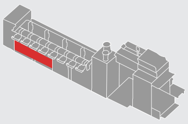
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				Circular comb is dirty or clogged with cotton. The meshing depth of the circular-comb brush is not sufficient.	– Do a check of the meshing depth of the circular-comb brush. – Set the meshing depth of the circular-comb brush (*refer to ▸ 557*).
				The top comb is not put.	Put the top comb (*refer to ▸ 566*).
				The top comb is dirty and clogged.	Clean the top comb (*refer to ▸ 507*).
				The feed trough plate is 1-sided.	Set the feed trough plate (*refer to ▸ 579*).
				The type of the nipper feed roller is not applicable with the detaching distance.	Make sure that you use the right type of feed to get your noil percentage (*refer to ▸ 307*).
				The drive for the nipper feed roller drive is not reliable.	– Adapt the eccentric shaft at central setting mechanism (*refer to ▸ 313*). – Tighten the ratchet wheels (*refer to ▸ 304*).
				The pressure of top detaching roller is too low.	Set the pressure of top detaching rollers (*refer to ▸ 413*).
1004			Table funnel 4	B114	--
				The fleece is smooth.	– Adapt the table funnel (*refer to ▸ 415*). – Remove the table funnel (*refer to ▸ 506*).

Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				The circular comb is dirty or clogged with cotton. The meshing depth of the circular-comb brush is not sufficient.	– Do a check of the meshing depth of the circular-comb brush. – Set the meshing depth of the circular-comb brush (*refer to* ▸ *557*).
				The top comb is not put.	Put the top comb (*refer to* ▸ *566*).
				The top comb is dirty and clogged.	Clean the top comb (*refer to* ▸ *507*).
				The feed trough plate is 1-sided.	Set the feed trough plate (*refer to* ▸ *579*).
				The type of the nipper feed roller is not applicable with the detaching distance.	Make sure that you use the right type of feed to get your noil percentage (*refer to* ▸ *307*).
				The drive for the nipper feed roller is not reliable.	– Adapt the eccentric shaft at the central setting mechanism (*refer to* ▸ *313*). – Tighten the ratchet wheels (*refer to* ▸ *304*).
				The pressure of top detaching roller is too low.	Set the pressure of top detaching rollers (*refer to* ▸ *413*).
1005			Table funnel 5	B211	--
				The fleece is smooth.	– Adapt the table funnel (*refer to* ▸ *415*). – Remove the table funnel (*refer to* ▸ *506*).

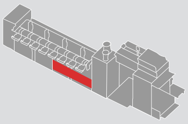
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				The circular comb is dirty or clogged with cotton. The meshing depth of the circular-comb brush is not sufficient.	– Do a check of the meshing depth of the circular-comb brush. – Set the meshing depth of the circular-comb brush (*refer to ▸ 557*).
				The top comb is not put.	Put the top comb (*refer to ▸ 566*).
				The top comb is dirty and clogged.	Clean the top comb (*refer to ▸ 507*).
				The feed trough plate is 1-sided.	Set the feed trough plate (*refer to ▸ 579*).
				The type of the nipper feed roller is not applicable with the detaching distance.	Make sure that you use the right type of feed to get your noil percentage (*refer to ▸ 307*).
				The drive for the nipper feed roller is not reliable.	– Adapt the eccentric shaft at the central setting mechanism (*refer to ▸ 313*). – Tighten the ratchet wheels (*refer to ▸ 304*).
				The pressure of top detaching roller is too low.	Set the pressure of top detaching rollers (*refer to ▸ 413*).
1006			Table funnel 6	B212	--
				The fleece is smooth.	– Adapt the table funnel (*refer to ▸ 415*). – Remove the table funnel (*refer to ▸ 506*).

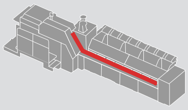
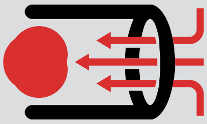
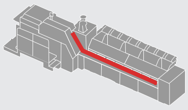
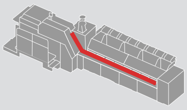
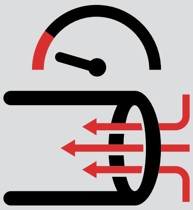
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				The circular comb is dirty or clogged with cotton. The meshing depth of the circular-comb brush is not sufficient.	– Do a check of the meshing depth of the circular-comb brush. – Set the meshing depth of the circular-comb brush (*refer to* ▸ *557*).
				The top comb is not put.	Put the top comb (*refer to* ▸ *566*).
				The top comb is dirty and clogged.	Clean the top comb (*refer to* ▸ *507*).
				The feed trough plate is 1-sided.	Set the feed trough plate (*refer to* ▸ *579*).
				The type of the nipper feed roller is not applicable with the detaching distance.	Make sure that you use the right type of feed to get your noil percentage (*refer to* ▸ *307*).
				The drive for the nipper feed roller is not reliable.	– Adapt the eccentric shaft at the central setting mechanism (*refer to* ▸ *313*). – Tighten the ratchet wheels (*refer to* ▸ *304*).
				The pressure of top detaching roller is too low.	Set the pressure of top detaching rollers (*refer to* ▸ *413*).
1007			Table funnel 7	B213	--
				The fleece is smooth.	– Adapt the table funnel (*refer to* ▸ *415*). – Remove the table funnel (*refer to* ▸ *506*).

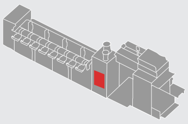
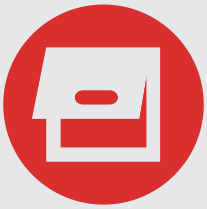
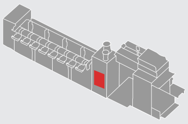
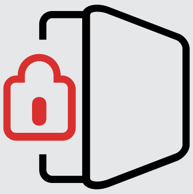
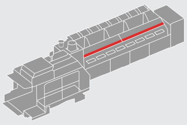
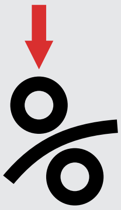
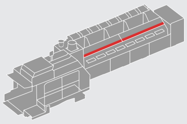
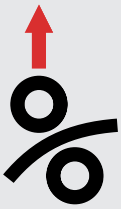
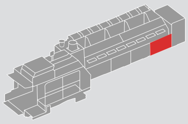
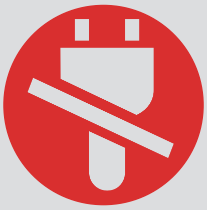
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				The circular comb is dirty or clogged with cotton. The meshing depth of the circular-comb brush is not sufficient.	– Do a check of the meshing depth of the circular-comb brush. – Set the meshing depth of the circular-comb brush (*refer to* ▸ *557*).
				The top comb is not put.	Put the top comb (*refer to* ▸ *566*).
				The top comb is dirty and clogged.	Clean the top comb (*refer to* ▸ *507*).
				The feed trough plate is 1-sided.	Set the feed trough plate (*refer to* ▸ *579*).
				The type of the nipper feed roller is not applicable with the detaching distance.	Make sure that you use the right type of feed to get your noil percentage (*refer to* ▸ *307*).
				The drive for the nipper feed roller is not reliable.	– Adapt the eccentric shaft at central setting mechanism (*refer to* ▸ *313*). – Tighten the ratchet wheels (*refer to* ▸ *304*).
				The pressure of top detaching roller is too low.	Set the pressure of top detaching rollers (*refer to* ▸ *413*).
1008			Table funnel 8	B214	--
				The fleece is smooth.	– Adapt the table funnel (*refer to* ▸ *415*). – Remove the table funnel (*refer to* ▸ *506*).

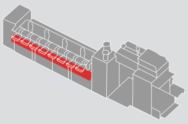
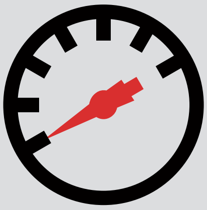
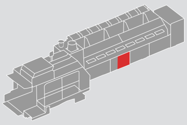
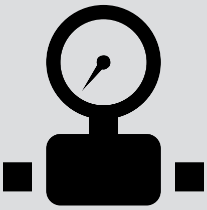
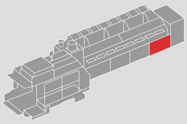
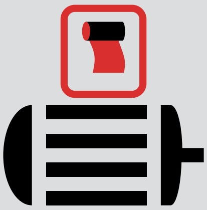
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				The circular comb is dirty or clogged with cotton. The meshing depth of the circular-comb brush is not sufficient.	– Do a check of the meshing depth of the circular-comb brush. – Set the meshing depth of the circular-comb brush (*refer to* ▸ *557*).
				The top comb is not put.	Put the top comb (*refer to* ▸ *566*).
				The top comb is dirty and clogged.	Clean the top comb (*refer to* ▸ *507*).
				The feed trough plate is 1-sided.	Set the feed trough plate (*refer to* ▸ *579*).
				The type of the nipper feed roller is not applicable with the detaching distance.	Make sure that you use the right type of feed to get your noil percentage (*refer to* ▸ *307*).
				The drive for the nipper feed roller is not reliable.	– Adapt the eccentric shaft at the central setting mechanism (*refer to* ▸ *313*). – Tighten the ratchet wheels (*refer to* ▸ *304*).
				The pressure of top detaching roller is too low.	Set the pressure of top detaching rollers (*refer to* ▸ *413*).
1011			Section 1 Fly ducts are blocked	B107	--
				The fly duct cover is not correctly attached.	– Do a check of all the fly duct covers. – Attach the fly duct cover (*refer to* ▸ *322*).

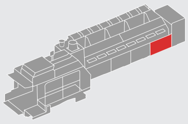
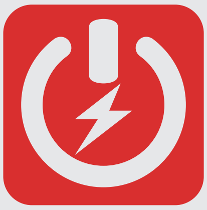
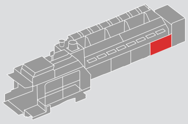
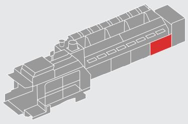
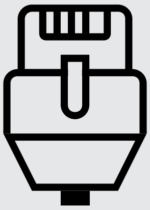
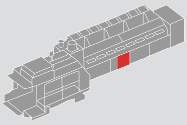
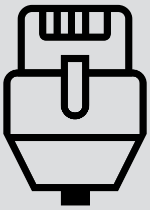
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				Fly duct: The circular-comb brush is filled with collected cotton.	– Do a check of the fly duct. – Do a check of the circular-comb brush. – Clean the rear side of the combing unit (*refer to* ▸ *511*). – Set the circumferential speed of the circular-comb brush (*refer to* ▸ *556*). – Set the meshing depth of the circular-comb brush (*refer to* ▸ *557*).
				The fly duct is clogged or the fly duct surface is tacky.	– Do a check of the fly duct. – Do a check of the circular-comb brush. – Clean the rear side of combing unit (*refer to* ▸ *511*). – Clean the stripper and the fly duct (*refer to* ▸ *512*).
				Suction: The suction in the suction aggregates is not sufficient.	Do a check of the suction rate (*refer to* ▸ *418*) and make sure that the suction is sufficient.
				Suction: The suction in the suction aggregates is sufficient.	Adjust the vacuum in the fly duct (*refer to* ▸ *421*).

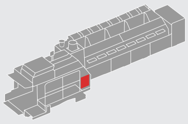
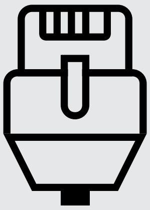
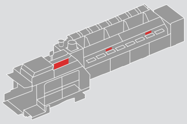
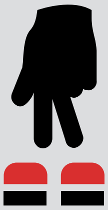
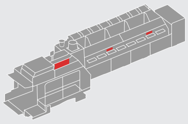
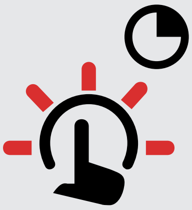
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				Light barrier: The light beam at the light barrier is stopped.	Do a check of the light barriers (*refer to* ▸ *352*).
1012			Section 2 Fly ducts are blocked	B207	--
				The fly duct cover is not correctly attached.	– Do a check of all the fly duct covers. – Attach the fly duct cover (*refer to* ▸ *322*).
				Fly duct: The circular-comb brush is filled with collected cotton.	– Do a check of the fly duct. – Do a check of the circular-comb brush. – Clean the rear side of combing unit (*refer to* ▸ *511*). – Set the circumferential speed of the circular-comb brush (*refer to* ▸ *556*). – Set the meshing depth of the circular-comb brush (*refer to* ▸ *557*).
				The fly duct is clogged or the fly duct surface is tacky.	– Do a check of the fly duct. – Do a check of the circular-comb brush. – Clean the rear side of the combing unit (*refer to* ▸ *511*). – Clean the stripper and the fly duct (*refer to* ▸ *512*).

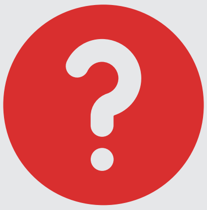
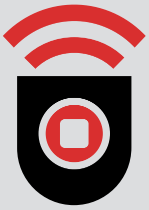
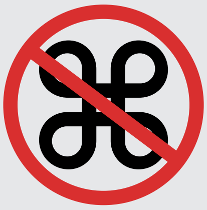
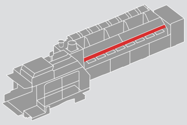
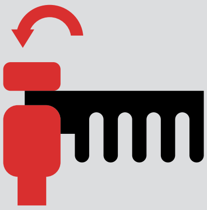
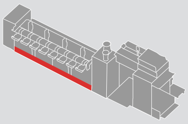
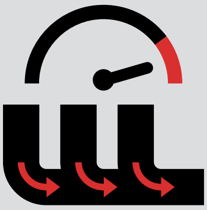
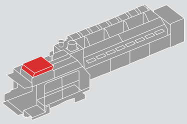
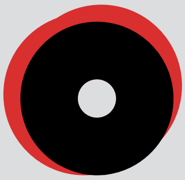
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				Suction: The suction in the suction aggregates is not sufficient.	– Do a check of the suction rate (*refer to* ▸ *418*) and make sure that the suction is sufficient. – Adjust the vacuum in the fly duct (*refer to* ▸ *421*). – Adjust the noil suction monitor.
				Light barrier: Light beam at the light barrier is stopped.	Do a check of the light barriers (*refer to* ▸ *352*).
1013			Extraction pipe for combed material Jam	B14x	--
				The extraction pipe is blocked.	Remove the material clot in the pipe.
				The material does not go through the extraction pipe.	Make sure that all 8 slivers go from table calenders to the extraction pipe.
1014			Extraction pipe for combed material Vacuum is high	B340	--
				The combed material extraction is installed, but it is not activated in the basic settings.	Activate the combed material extraction.
				Slider for the combed material extraction is not closed.	Close the slider.
1015			Extraction pipe for combed material Vacuum is low	B340	--
				The combed material extraction is not installed, but it is activated in the basic settings.	Deactivate the combed material extraction.

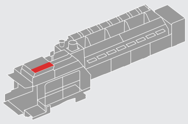
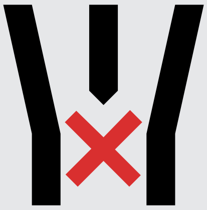
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				Slider for the combed material extraction is closed.	Open the slider.
1021			Noil collector flap is open	B301	--
				The noil collector flap is open and the start button is pushed.	– Close the noil collector flap. – Push the noil measurement button.
1022			Noil collector flap is not open	B301	--
				The noil collector flap is closed and the noil measurement button is pushed.	– Open the noil collector flap. – Push the noil measurement button.
1023			Detaching rollers are not loaded	Y202	--
				The air pressure supply is not sufficient.	– Make sure that the air pressure supply is sufficient. – Compressed-air pressure: 7 bar – Compressed-air consumption for each machine: 0.4 m^3/h
1024			Detaching roller pressure is not released	Y202	--
				Pneumatic problem	Do a check of the tubes and connections.
				Y202 is defective.	Replace Y202.
1031			Power outage	K102	--
				400 V power is lost.	Restore the power.
				One phase is missing from the power supply.	Restore all the phases.

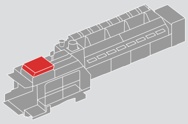
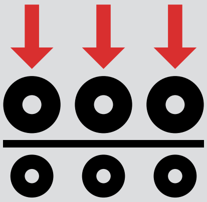
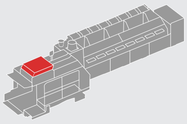
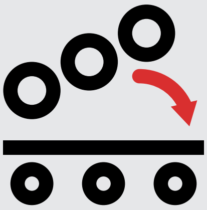
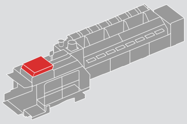
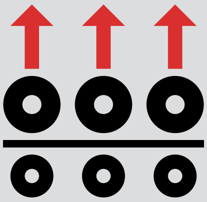
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				The sequence of the phases is incorrect.	Exchange the 2 phases.
1032			Vacuum in suction duct is low	B210	--
				The suction collection has a problem.	– Do a check of the suction rate (*refer to* ▸ *418*) and make sure that suction is sufficient. – Adjust the vacuum in the fly duct (*refer to* ▸ *421*).
1033			No compressed air	B200	--
				The air pressure supply is not sufficient.	– Make sure that the air pressure supply is sufficient. – Compressed-air pressure: 7 bar – Compressed-air consumption for each machine: 0.4 m³/h
				The pressure regulator is not set.	Set the compressed air pressure (*refer to* ▸ *365*).
				The pressure regulator is set correctly.	Set the pressure switch.
1034			Main circuit breaker has tripped	Q102	--
				Defective device	Replace the device.
				Short circuit in wiring	Repair the wiring.

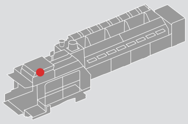
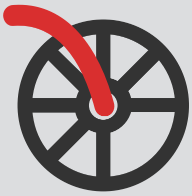
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1035			Inverter circuit breaker has tripped	Q101	--
				Defective device	Replace the device.
				Short circuit in wiring	Repair the wiring.
1036			24 V circuit breaker has tripped	F112	--
				Defective device	Replace the device.
				Short circuit in wiring	Repair the wiring.
1037			No connection to control cabinet 1	A1xx	--
				The Ethernet connection is incorrect: All red LEDs on PLC modules are blinking.	Do a check of the Ethernet connection between the electrical cabinets.
				The PLC module is defective.	– Do a check of the PLC modules. – Replace the PLC modules in accordance with the electrical documentation.
1038			No connection to control cabinet 2	A2xx	--
				The Ethernet connection is incorrect: All red LEDs on PLC modules are blinking.	Do a check of the Ethernet connection between the electrical cabinets.

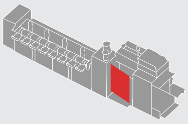
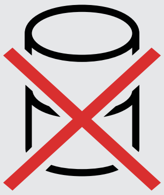
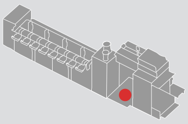
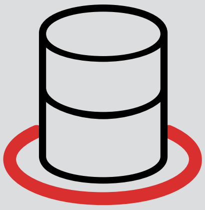
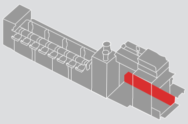
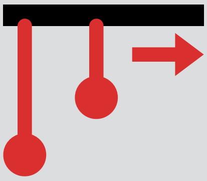
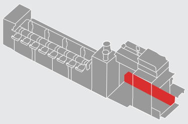
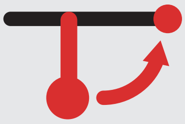
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				The PLC module is defective.	– Do a check of the PLC modules. – Replace the PLC modules in accordance with the electrical documentation.
1039			No connection to control cabinet 3	A3xx	--
				The Ethernet connection is incorrect: All red LEDs on PLC modules are blinking.	Do a check of the Ethernet connection between the electrical cabinets.
				The PLC module is defective.	– Do a check of the PLC modules. – Replace the PLC modules in accordance with the electrical documentation.
1040			Multiple buttons were pushed at the same time	Sxxx	--
				Incorrect operation of operator	Do not push multiple buttons at the same time.
				Electrical problem	Do the check of all buttons in service menus 7.1.2.
1041			Button was pushed too long	Sxxx	--
				The buttons do not operate correctly.	– Do a check of the cabling of buttons. – If the buttons do not operate correctly, use the service page for more information.

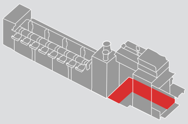
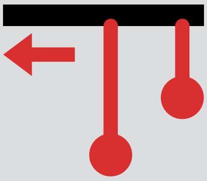
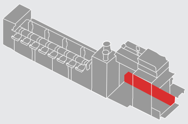
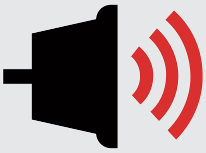
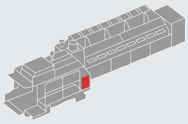
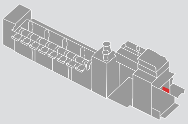
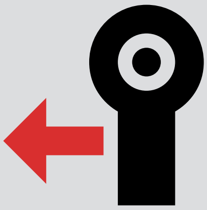
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1042	--		Unknown fault	Unknown fault	– Try again. – If the fault occurs frequently, contact Rieter and add a system dump.
1043	--		Machine is stopped by remote access	The machine is stopped by Rieter remote access. (Only installed in test machines.)	If the instruction to turn off the machine is not given, do not turn off the machine.
1044	--		Command is not allowed	A command has been given at a time when it cannot be started. (For example: can change during ROBOlap)	Push the start button and try again later.
1045			Top comb is installed incorrectly	S140 – S144, S240 – S243	--
				Top comb is installed incorrectly.	Install the top combs correctly.
1046			Vacuum in suction duct is high	B210	--
				Slider is open too far.	Decrease the suction.
1101			Lap formation at drafting system	S25	--

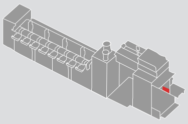
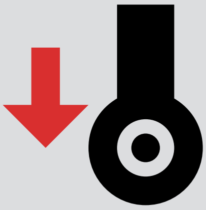
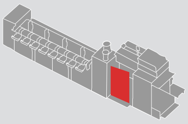
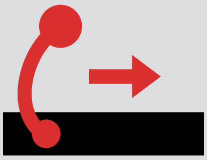
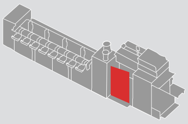
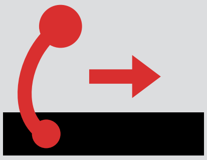
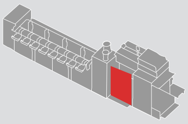
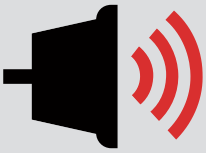
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				A lap is in the drafting system.	– To release the load from the drafting system and the delivery disks, turn the rotary switch to the left position for a short time and then release the rotary switch. – Remove the lap. – Put the sliver into the coiler. – Pull down the loading arm.
				The sensor module is defective or set incorrectly.	– Do a check of the signal. – If the sensor module is defective, replace the sensor module.
1102			Web nozzle jam at drafting system	B4	--
				The web nozzle is open.	– Remove the sliver jam. – Put the sliver into the web nozzle or close the web nozzle. – Do a check to see if a drafting system hood is open.
				The sensor is defective.	– Do a check of the sensor. – If the sensor is defective, replace the sensor.

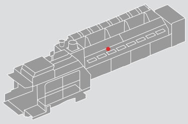
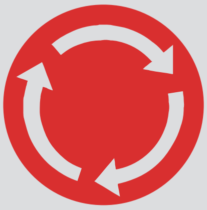
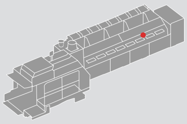
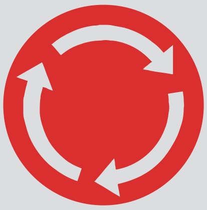
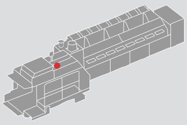
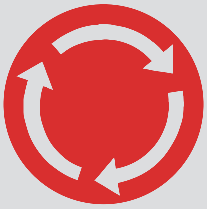
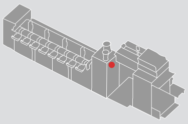
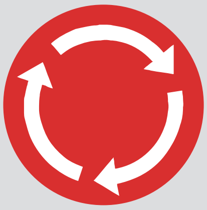
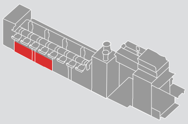
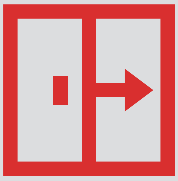
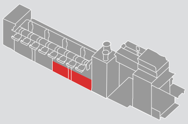
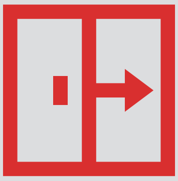
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1103			Drafting system is not loaded	S22	--
				A sliver jam occurred.	Remove the sliver jam.
				The sensor is set incorrectly.	– Do a check to see if the sensor is set correctly. – If the sensor is not set correctly, set the sensor again.
				The locking mechanism is defective.	– Do a check of the locking mechanism. – Find the solution to the defect.
				The pneumatic valve is off.	– Charge the pneumatic valve. – Start the pneumatic valve manually (*refer to* ▸ *367*). – If the pneumatic valve is defective, replace the pneumatic valve.
1104			Drafting system is not closed	B3	--
				The drafting system is open.	Pull down the loading arm.
				The sensor is set incorrectly.	– Do a check of the sensor. – Set the sensor. – If the sensor is defective, replace the sensor.
1105			Drafting system load is not released	B3	--

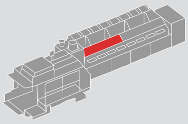
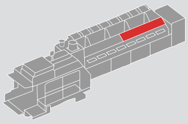
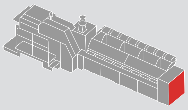
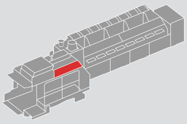
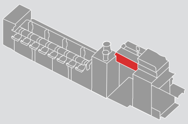
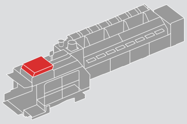
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				During the sliver cutting procedure, the load is released from the drafting system first. If the control system does not find that the load is released from the drafting system after 1 s, the fault message is shown.	– Do a check to see if the clamping of the element is done. – Do a check of the pneumatic cylinders and the pneumatic hoses. – Do a check of the sensor. – If the sensor is defective, replace the sensor.
1201			Coiler Sliver jam	B24	--
				A sliver jam occurred at the coiler. The green LED is on. The yellow LED is off.	– Remove the sliver jam between the coiler and the delivery disks. – Put the sliver into the coiler. – Clean the sliver duct in the coiler (*refer to* ▸ *503*). – Increase the speed of the coiler or the belt tension (*refer to* ▸ *389*). – Make sure that the green LED and the yellow LED are on.
				The light scanner is dirty or defective.	– Clean the sliver jam sensor (*refer to* ▸ *502*). – If the light scanner is defective, replace the light scanner.

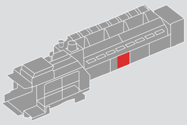
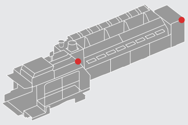
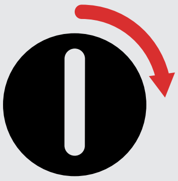
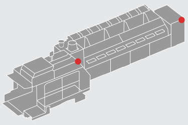
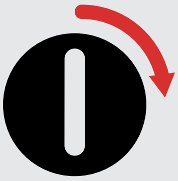
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1202			Empty can is missing	B305	--
				The can is in the incorrect position.	Place a new can into the delivery unit.
				The empty can is in the correct position, but the sensor operates incorrectly.	Do a check to see if the sensor operates correctly (*refer to* ▸ *123*).
1204			Empty-can position is not free	B305	--
				A can is put at the empty can position but the can changer is not in the home position.	– Remove the can and start the machine. – Replace the can after the can changer stops moving.
1211			Can changer is not in front position	B44	--
				The can changer is blocked.	– Do a check of the mechanics. – Operate the can changer manually in service mode menu 7.1.4.2.
				The motor is defective.	Replace the motor.
1212			Can changer is not in home position	B41	--
				The can changer is blocked.	– Do a check of the mechanics. – Operate the can changer manually in service mode menu 7.1.4.2.
				The motor is defective.	Replace the motor.

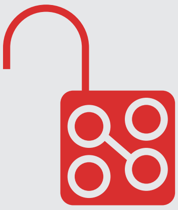
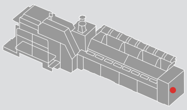
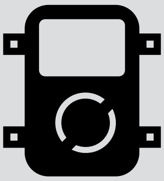
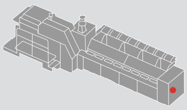
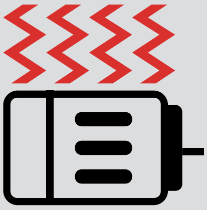
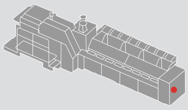
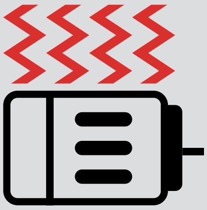
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1213			Can changer is not in rear position	B45	--
				The can changer is blocked.	– Do a check of the mechanics. – Operate the can changer manually in service mode menu 7.1.4.2.
				The motor is defective.	Replace the motor.
1214			Can changer Sensor fault	B44, B41, B45	--
				More than 1 sensor is in operation.	Do a check of sensors and mechanics.
1215			Can changer Motor starter fault	Q303	--
				The can changer is blocked.	– Do a check of the mechanics. – Operate the can changer manually in service mode menu 7.1.4.2.
				The motor is defective.	Replace the motor.
1221			Can centering device is not open	B310	--
				The pneumatic cylinder moves slowly or incorrectly.	– Make sure that the pneumatic cylinder is not blocked. – Make sure that the throttle valve is closed. – Do a check of the reed sensors.

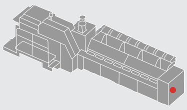
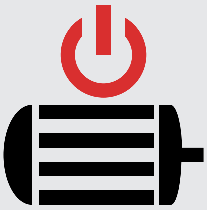
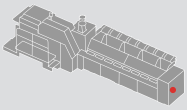
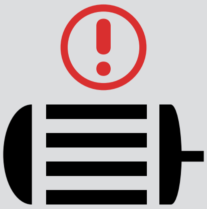
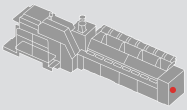
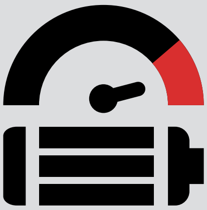
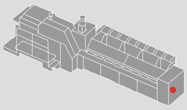
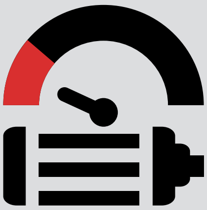
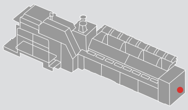
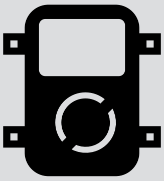
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1222			Can centering device is not closed	B310	--
				The pneumatic cylinder moves slowly or incorrectly.	– Make sure that the pneumatic cylinder is not blocked. – Make sure that the throttle valve is closed. – Do a check of the reed sensors.
1231			2nd empty can is not in home position	B312	--
				The pneumatic cylinder moves slowly or incorrectly.	– Make sure that the pneumatic cylinder is not blocked. – Make sure that the throttle valve is closed. – Do a check of the reed sensors.
1232			2nd empty can is not in feed position	B313	--
				The pneumatic cylinder moves slowly or incorrectly.	– Make sure that the pneumatic cylinder is not blocked. – Make sure that the throttle valve is closed. – Do a check of the reed sensors.
1233			2nd empty can Sensor fault	B312, B313	--
				The 2 sensors were activated.	Do a check of the sensors.

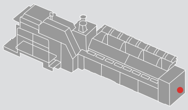
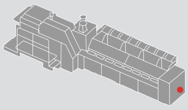
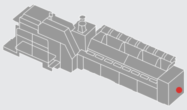
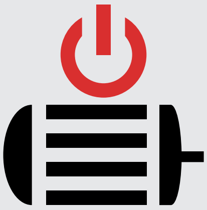
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1301			Section 2 Emergency stop	S211	--
				The emergency stop button is pushed.	– Identify the cause for the emergency stop. – Unlock the emergency stop button.
1302			Section 1 Emergency stop	S111	--
				The emergency stop button is pushed.	– Identify the cause for the emergency stop. – Unlock the emergency stop button.
1303			Drafting system Emergency stop	S311	--
				The emergency stop button is pushed.	– Identify the cause for the emergency stop. – Unlock the emergency stop button.
1304			Suction box Emergency stop	S321	--
				The emergency stop button is pushed.	– Identify the cause for the emergency stop. – Unlock the emergency stop button.
1305			Section 1 Sliding door is not closed	S104	--
				The sliding door of section 1 is open.	Close the sliding door of section 1.
1306			Section 2 Sliding door is not closed	S204	--
				The sliding door of section 2 is open.	Close the sliding door of section 2.

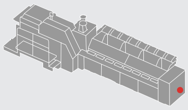
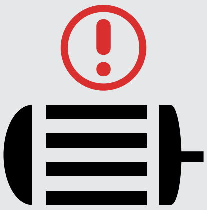
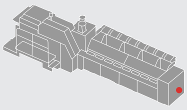
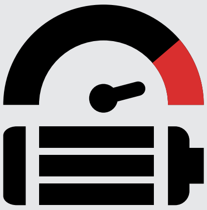
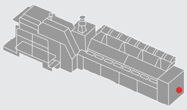
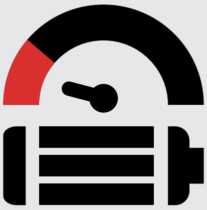
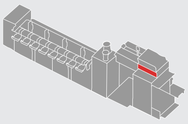
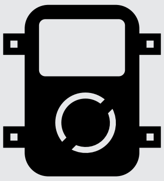
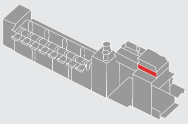
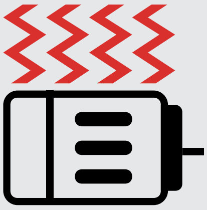
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1307			Section 2 Hood is not closed	S102 The section 2 hood is open.	-- Close the section 2 hood.
1308			Section 1 Hood is not closed	S202 The section 1 hood is open.	-- Close the section 1 hood.
1309			Head stock door is not closed	S101 The head stock door is open.	-- Close the head stock door.
1310			Cover of main-draft belt is not closed	S18 The cover of the main-draft belt is open.	-- Close the cover of the main-draft belt.
1311			Cover of break draft belt is not closed	S19 The cover of break-draft belt is open.	-- Close the cover of break-draft belt.
1312			Drafting system hood is not closed	S20	--

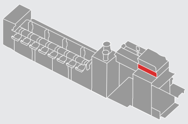
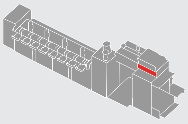
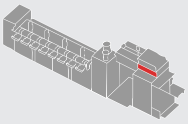
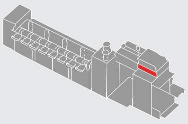
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				The drafting system hood is open.	– Close the drafting system hood. – Do a check of the safety limit switch. – If the safety limit switch is defective, replace the safety limit switch.
1313	--		External emergency stop	K204	--
				An external shutdown occurred.	Find and correct the cause for the shutdown.
1314			Safety circuit Fault	An electrical problem in the safety circuit is found.	Do the check and repair all safety switches in service menu 7.1.7.
1315			Safety bypass is not activated	S304, S132	--
				The jog button on the head stock is pushed but the safety bypass is not activated.	Activate the safety bypass switch.
1316			Safety bypass is activated	S304, S132	--
				The green start button is pushed but the safety bypass switch on the suction box is activated.	Deactivate the safety bypass switch.

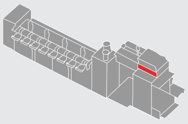
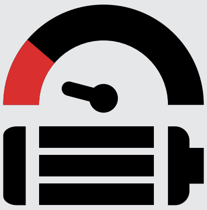
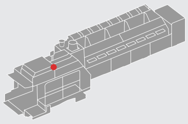
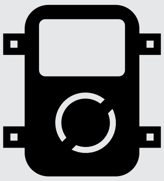
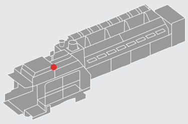
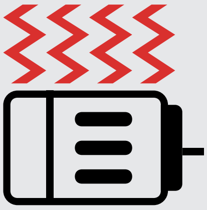
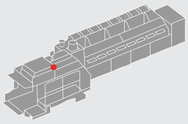
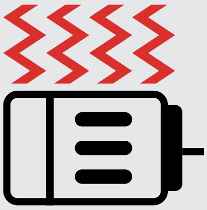
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1317	--		Service mode: Safety circuit is open	The machine is in service mode and a safety switch is open.	Close all safety switches.
1401			Main motor General fault	U101	--
				Main motor fault	Do a check of the error message on the inverter.
1402			Main motor Overtemperature	M101	--
				The motor fan has no airflow.	Clean the motor fan (*refer to* ▸ *517*).
				The brake does not have a freewheeling.	Do a check of the brake freewheeling.
				The mechanical part is not easy to move.	Make sure that the mechanical part is easy to move (*refer to* ▸ *117*).
				The electric motor operates on 2 phases only.	– Go to the electrician for help. – Do a check of the power supply. – Tighten the terminals again.
				A short circuit occurred in the motor.	– Go to the electrician for help. – Replace the motor.
1403			Main motor Heat sink overtemperature	U101	--
				More than 4 000 h since the last cleaning of the air cooler in the head stock.	Clean the air cooler (*refer to* ▸ *515*).

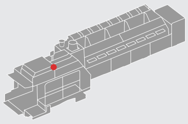
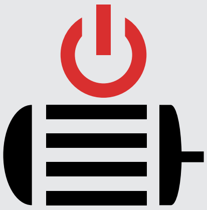
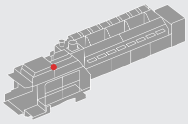
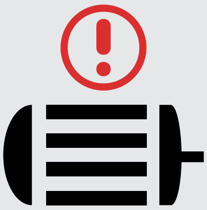
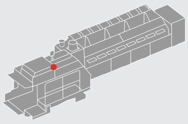
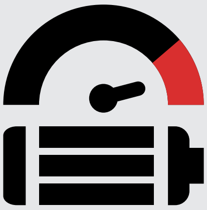
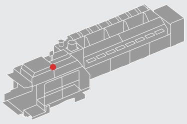
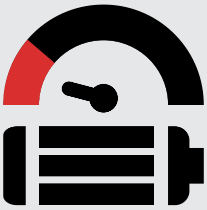
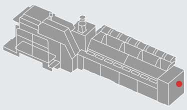
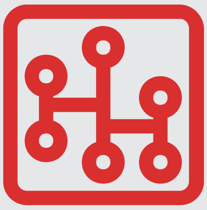
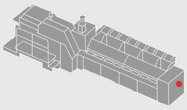
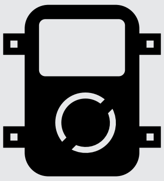
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				The inverter temperature is too high.	
1404			Main motor is offline	U101	--
				No connection between inverter and PLC	Do a check of the Ethernet wires.
				Incorrect address set on the inverter	Correct the Powerlink address in accordance with the electrical documentation.
1405			Main motor Overload	U101	--
				Too much friction in mechanics	Do a check and repair mechanics.
1406			Main motor Overvoltage	U101	--
				The brake causes a blockage of the motor.	Do a check of the brake resistor.
1407			Main motor Undervoltage	U101	--
				Main motor fault	If the main motor fault occurs frequently, inform Rieter service.
1411			Brush motor General fault	U102	--
				The frequency converter operates incorrectly.	Do a check of the frequency converter.

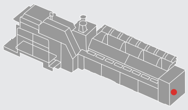
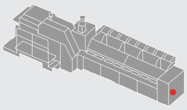
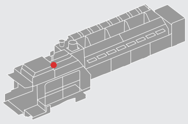
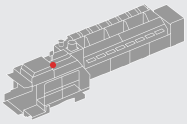
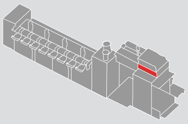
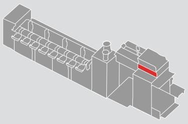
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1412			Brush motor Overtemperature	M102	--
				The motor fan has no airflow.	Clean the motor fan (*refer to* ▸ *517*).
				The brake does not have a freewheeling.	Do a check of the brake freewheeling.
				The mechanical part is not easy to move.	Make sure that the mechanical part is easy to move (*refer to* ▸ *117*).
				The electric motor operates on 2 phases only.	– Go to the electrician for help. – Do a check of the power supply. – Tighten the terminals again.
				A short circuit occurred in the motor.	– Go to the electrician for help. – Replace the motor.
1413			Brush motor Heat sink overtemperature	U102	--
				More than 4 000 h since the last cleaning of the air cooler in the headstock.	Clean the air cooler (*refer to* ▸ *515*).
				The inverter temperature is too high.	
1414			Brush motor is offline	U102	--
				No connection is between the motor and the PLC.	Do a check of the connection between the frequency converter and the PLC.

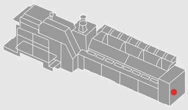
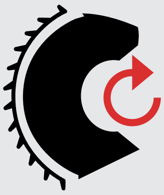
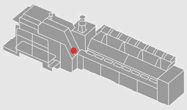
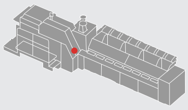
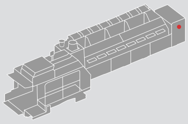
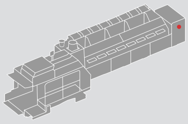
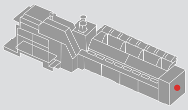
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1415			Brush motor Overload	U102	--
				Too much friction in mechanics	Do a check and reapir mechanics.
1416			Brush motor Overvoltage	U102	--
				Brush motor fault	If the brush motor fault occurs frequently, inform Rieter service.
1417			Brush motor Undervoltage	U102	--
				Brush motor fault	If the brush motor fault occurs frequently, inform Rieter service.
1421			Coiler motor General fault	U302	--
				The frequency converter operates incorrectly.	Do a check of the frequency converter.
1422			Coiler motor Overtemperature	M302	--
				The motor fan has no airflow.	Clean the motor fan (*refer to* ▶ *517*).
				The brake does not have a freewheeling.	Do a check of the brake freewheeling.
				The mechanical part is not easy to move.	Make sure that the mechanical part is easy to move (*refer to* ▶ *117*).

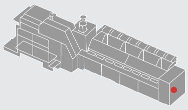
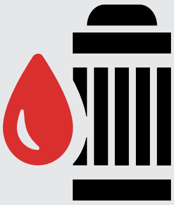
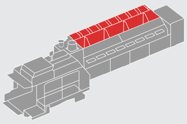
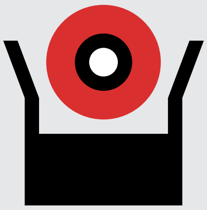
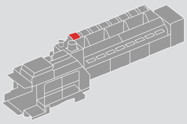
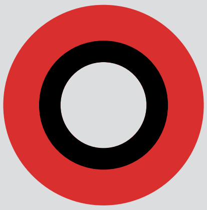
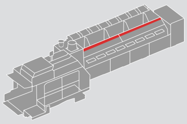
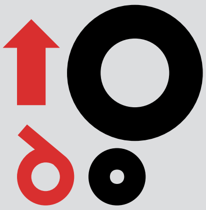
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				The electric motor operates on 2 phases only.	– Go to the electrician for help. – Do a check of the power supply. – Tighten the terminals again.
				A short circuit occurred in the motor.	– Go to the electrician for help. – Replace the motor.
1423			Coiler motor Heat sink overtemperature	U302	--
				More than 4 000 h since the last cleaning of the air cooler in the head stock.	Clean the air cooler (*refer to* ▸ *515*).
1424			Coiler motor is offline	U302	--
				No connection is between the motor and the PLC.	Do a check of the connection between the frequency converter and the PLC.
1425			Coiler motor Overload	U302	--
				Too much friction in mechanics	Do a check and repair mechanics.
1426			Coiler motor Overvoltage	U302	--
				Coiler motor fault	If the coiler motor fault occurs frequently, inform Rieter service.

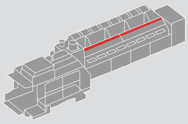
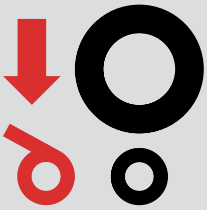
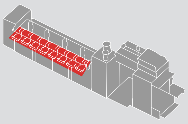
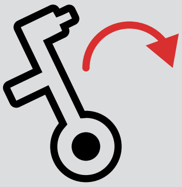
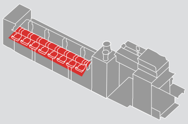
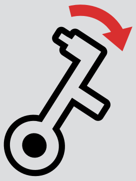
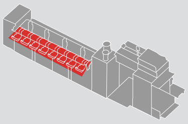
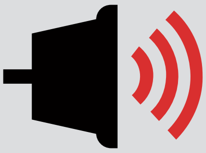
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1427			Coiler motor Undervoltage	U302	--
				Coiler motor fault	If the coiler motor fault occurs frequently, inform Rieter service.
1431			Drafting system motor General fault	U301	--
				The frequency converter operates incorrectly.	Do a check of the frequency converter.
1432			Drafting system motor Overtemperature	M301	--
				The motor fan has no airflow.	Clean the motor fan (*refer to* ▸ *517*).
				The brake does not have a freewheeling.	Do a check of the brake freewheeling.
				The mechanical part is not easy to move.	Make sure that the mechanical part is easy to move (*refer to* ▸ *117*).
				The electric motor operates on 2 phases only.	– Go the electrician for help. – Do a check of the power supply. – Tighten the terminals again.
				A short circuit occurred in the motor.	– Go the electrician for help. – Replace the motor.
1433			Drafting system motor Heat sink overtemperature	U301	--
				More than 4 000 h since the last cleaning of the air cooler in the headstock.	Clean the air cooler (*refer to* ▸ *515*).

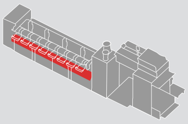
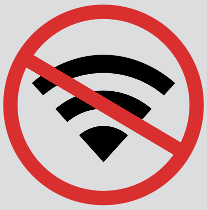
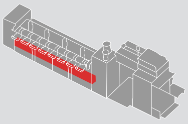
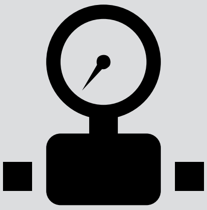
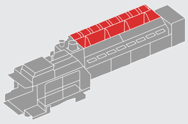
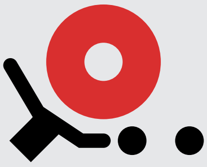
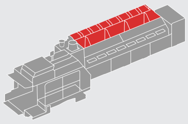
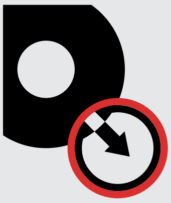
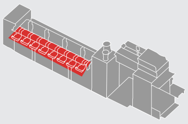
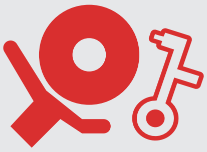
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1434			Drafting system motor is offline	U301	--
				No connection is between the motor and the PLC.	Do a check of the connection between the frequency converter and the PLC.
1435			Drafting system motor Overload	U301	--
				Too much friction in mechanics	Do a check and repair mechanics.
1436			Drafting system motor Overvoltage	U301	--
				Fault of drafting system motor	If it occurs frequently, inform Rieter service.
1437			Drafting system motor Undervoltage	U301	--
				Fault of drafting system motor	If it occurs frequently, inform Rieter service.
1441			Lap motor Drive electronics fault	N103	--
				Electrical problem of the lap motor or overload	Do a check of the blink code on the lap motor electronics.
1442			Lap motor General fault	N103	--
				Lap motor fault	If it occurs frequently, inform Rieter service.

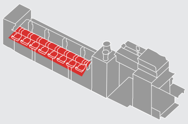
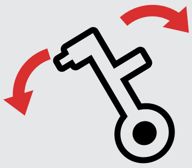
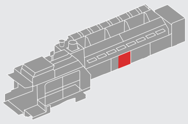
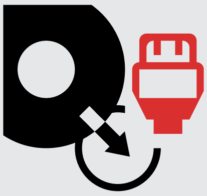
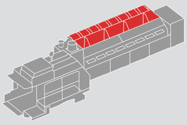
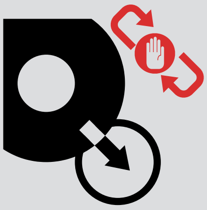
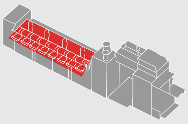
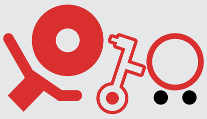
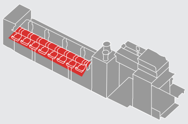
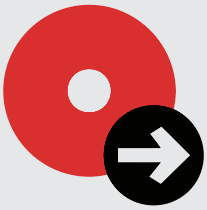
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1451			Index encoder is too fast	B101	--
				Gear ration is incorrect.	Do a check of the belt and pulleys.
1452			Index encoder is too slow	B101	--
				Gear ration is incorrect.	Do a check of the belt and pulleys.
1453			Delivery disks are too fast	B2	--
				The delivery tension (VA), pulley W3 is set incorrectly.	Correct the setting in accordance with the installed pulley.
1454			Delivery disks are too slow	B2	--
				The delivery tension (VA), pulley W3 is set incorrectly.	Correct the setting in accordance with the installed pulley.
				The transmission belt is defective.	Replace the belt.
1455			Coiler is too fast	B302	--
				Gear ration is incorrect.	Do a check of the belt and pulleys.
1456			Coiler is too slow	B302	--
				Transmission belt is defective.	Replace the belt.
				Gear ration is incorrect.	Do a check of the belt and pulleys.

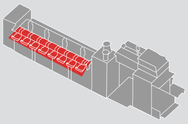
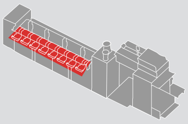
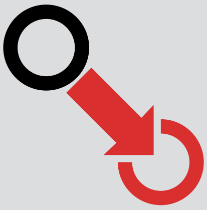
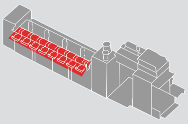
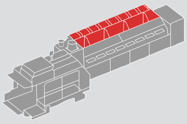
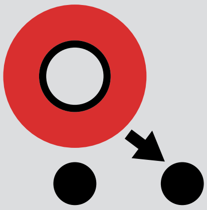
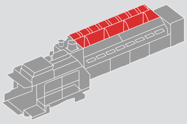
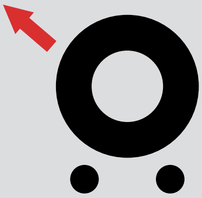
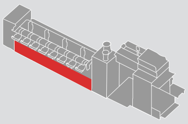
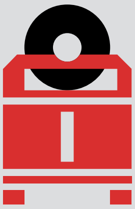
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1457			Index encoder does not move	B101	--
				Transmission belt is defective.	Replace the belt.
				Index 24 pin is not released.	Release the pin.
				Mechanical problem	Do a check of the circular combs and nippers.
1458			Sliver ramp entry Cylinder is too fast	B303	--
				The drafting system pulleys are set incorrectly.	Do a check of the settings for NW1, NW2, W1, W2, and W3.
1459			Sliver ramp entry Cylinder is too slow	B303	--
				The drafting system pulleys are set incorrectly.	Do a check of the settings for NW1, NW2, W1, W2, and W3.
				The transmission belt is defective.	Replace the belt.
1471			Oil pressure is high	B103	--
				The oil pressure sensor is defective.	Do a check of the oil pressure sensor.
1472			Oil pressure is low	B103	--
				The oil pump does not operate or the oil pump has a leak.	– Do a check of the belt for brush drive and oil pump. – Do a check of the hydraulic system.
1473			Index position is not reached	B101	--
				Main motor brake does not work correctly.	Do a check and repair the brake.

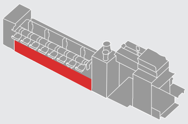
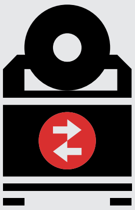
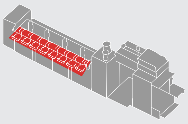
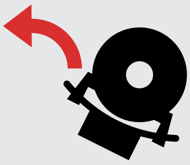
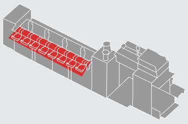
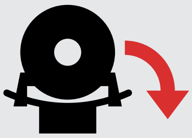
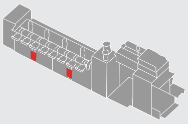
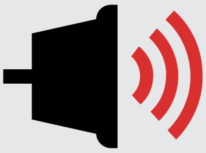
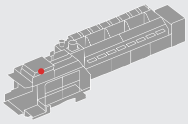
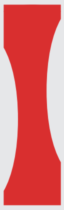
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				Other problem on main drive, index encoder, or mechanics	Do a check and repair mechanics.
1474			Oil filter is clogged	B102	--
				An overpressure occurred in the filter block.	Replace the oil filter (*refer to* ▸ *535*).
1501			Laps are empty	B121 – B224, B221 – B224	--
				The laps are empty.	Put new laps.
				The sensor is defective.	Do a check of the sensors.
1502			Lap end detected, but lap 8 is too big	B121 – B224, B221 – B224, B224	--
				A lap is empty. ROBOlap is ready to start but the light barrier on lap 8 is blocked.	Remove the blockage.
				A lap is empty but the other laps are not ready for ROBOlap.	Do a check of the laps.
				A sensor is defective.	Do a check of the sensor.
1511			Aeropic is not lifted	B229	--
				The pneumatic cylinder moves slowly or incorrectly.	– Make sure that the pneumatic cylinder is not blocked. – Make sure that the throttle valve is closed. – Do a check of the reed sensors.

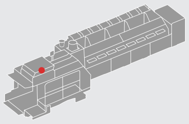
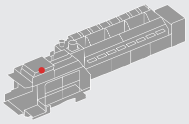
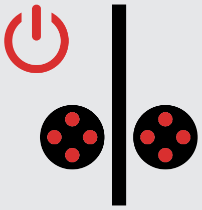
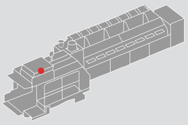
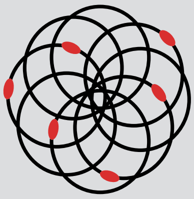
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1512			Aeropic is not lowered	B229	--
				The pneumatic cylinder moves slowly or incorrectly.	– Make sure that the pneumatic cylinder is not blocked. – Make sure that the throttle valve is closed. – Do a check of the reed sensors.
1521			Tube lever is not in neutral position	B232	--
				The pneumatic cylinder moves slowly or incorrectly.	– Make sure that the pneumatic cylinder is not blocked. – Make sure that the throttle valve is closed. – Do a check of the reed sensors.
1522			Tube lever is not in press-on position	B231	--
				The pneumatic cylinder moves slowly or incorrectly.	– Make sure that the pneumatic cylinder is not blocked. – Make sure that the throttle valve is closed. – Do a check of the reed sensors.
1523			Tube lever Sensor fault	B231, B232	--
				The 2 sensors are activated.	Do a check of the sensors.

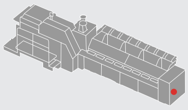
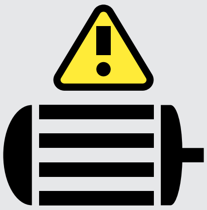
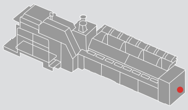
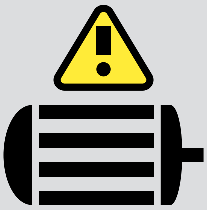
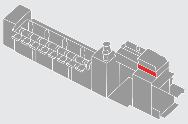
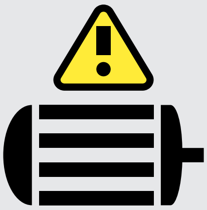
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1531			Interlock of the batt suction system Signal fault	K221, K222	--
				Electrical fault in the interlock signal	Repair the electric fault in accordance with the electrical documentation.
1532			ROBOlap Vacuum in batt suction duct is low	B220	--
				The suction system is not working correctly.	Repair the suction system.
				More than 1 machine starts the ROBOlap on the same pipe. Interlock is not working correctly.	Do a check of the interlock.
1541			ROBOlap Laps are in wrong positions	B127, B227, B230, B121 – B224, B221 – B224	--
				Laps have been detached manually. Laps must on lap rollers or on lap table.	Put laps at the correct position.
1542			ROBOlap Laps are not empty	B121 – B224, B221 – B224	--
				The laps are not empty after 4 m of unrolling.	Start again or remove the laps manually.
1543			Interlock Tube lever and lap carrier	B232, B231, B125, B126, B225, B226	--
				Tube lever has been moved while lap carrier is not up.	Do a check of the lap carrier sensors.

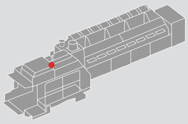
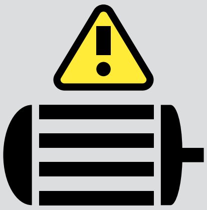
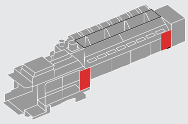
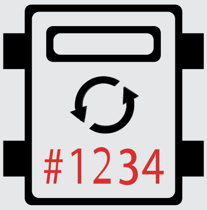
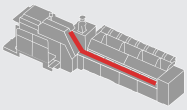
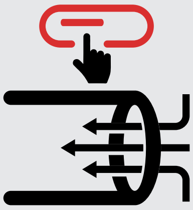
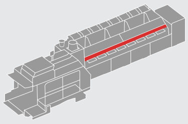
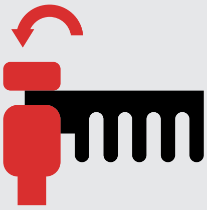
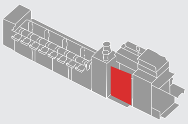
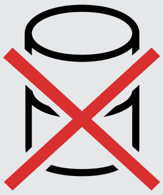
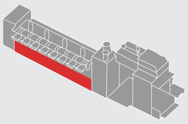
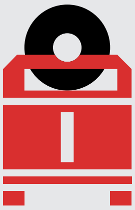
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1544			ROBOlap Tube lever is in undefined position	B231, B232	--
				The tube levers are not in a correct position after service.	– Activate the service mode. – Move tube lever to neutral position.
1551			No connection to ROBOlap I/O modules	A22x, A121	--
				PLC modules for ROBOlap do not work correctly.	Do a check of the LEDs or PLC modules.
				ROBOlap has been activated on a machine without ROBOlap support.	Deactivate the ROBOlap.
1552			ROBOlap Stop after single step	This fault message is used to stop the machine after a step in the function **ROBOlap: detach and piece with single steps**.	Push the start button.
1601			Laps, tubes, and carrier are in wrong position	B127, B227, B230, B121 – B224, B221 – B224	--
				After service mode, the machine cannot find the condition of the lap transport from sensor data.	Put laps and tubes at the correct position. For example carrier down, tubes are there, laps on rollers.
1602			Laps are gone	B127, B227	--
				Laps that are supplied by SERVOlap are removed manually.	Put back the laps.
				Sensors on lap carrier are blocked.	Clean the sensors and start again.

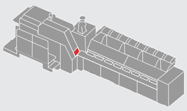
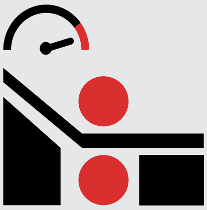
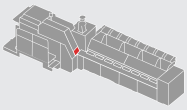
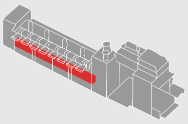
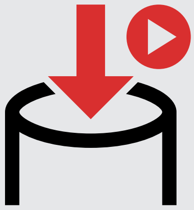
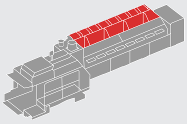
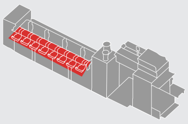
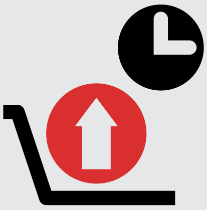
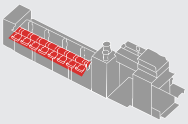
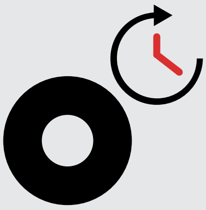
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1604			Lap carrier is not empty	B127, B227	--
				Laps have been lowered to lap rollers, but the lap carrier is not empty.	Put all laps to the lap rollers.
1605			Tubes are gone	B230	--
				The tubes are gone but the SERVOlap does not receive a request.	Put back the tubes.
1606			Tubes are back	B230	--
				The tubes were gone but are back.	Remove the tubes or push the start button.
1607			Not on all lap rollers are laps	B121 – B224, B221 – B224	--
				The laps are lowered to lap rollers but not on all lap rollers are laps.	Put all laps to the lap rollers.
1608			Lap rollers are not free	B121 – B224, B221 – B224	--
				The tubes have been ejected, but not all lap rollers are free.	Remove tubes from lap rollers.
1609			SERVOtrolley is missing	B128, B228	--
				No trolley is in position.	Put a new trolley in the correct position.
				The trolley is in the correct position, but the sensors operate incorrectly.	Do a check of the sensors (*refer to* ▸ *354*).

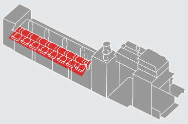
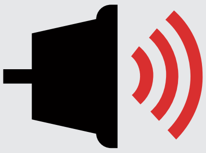
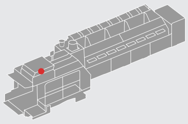
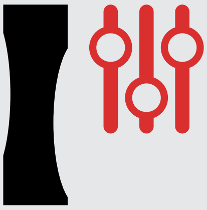
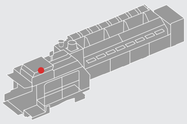
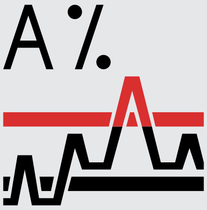
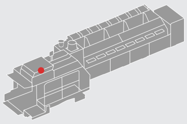
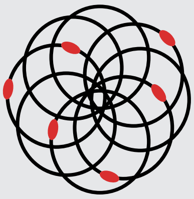
Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
1610			SERVOtrolley is not changed	B128, B228	--
				The SERVOtrolley was not changed since the last lap change.	Remove the empty trolley and put a new trolley.
1621			Lap carrier is not lifted	B125, B225	--
				The pneumatic cylinder moves slowly or incorrectly.	– Make sure that the pneumatic cylinder is not blocked. – Make sure that the throttle valve is closed. – Do a check of the reed sensors.
1622			Lap carrier is not lowered	B126, B226	--
				The pneumatic cylinder moves slowly or incorrectly.	– Make sure that the pneumatic cylinder is not blocked. – Make sure that the throttle valve is closed. – Do a check of the reed sensors.
1623			Lap carrier Sensor fault	B125, B225, B126, B226	--
				Lifted sensors and lowered sensors are active at the same time.	Do a check of the sensors.
1701			A% is out of range	B304, B295	--
				1 sliver is not in the drafting system.	Thread in all slivers.
				A% reference measurement is necessary.	Do reference measurement.

Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				Noil has changed.	Do a check of the noil and main draft.
1711			RQM General fault	B295	--
				Internal RQM problem	Switch off the machine and then switch on the machine again.
1712			RQM is offline	B295	--
				RQM faulty or not connected correctly.	Do a check of RQM.
				RQM is not installed but enable.	Set quality monitor to standard.
1713			Too many thick places were found	B295	--
				The drafting area is not clean.	– Check and clean the bottom wipers of drafting system. – Check and clean the top wipers of suction unit. – Clean the web funnel and nozzle.
				The combing head is not clean.	Clean the combing head. – Deflection top roller – Web bowl – Top comb and nipper
				Feeding procedure is incorrect.	– Check the alignment of the ratchet wheels. – Check the pawls tension.

Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				Circular comb condition	– Clean the circular comb. – Check the speed and condition of the circular-comb brush. – Check the wires of the circular comb. If most of the wires are damaged, replace the circular comb.
				Fly duct cover is not attached correctly.	– Check all the fly duct covers. – Attach the fly duct cover (*refer to* ▸ *322*).
				Low quality of the feed material	Check the lap quality.
4001			Main motor Warning	U101	Do a check of the inverter message.
4002			Brush motor Warning	U102	Do a check of the inverter message.
4003			Coiler motor Warning	U302	Do a check of the inverter message.

Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
4004			Drafting system motor Warning	U301	Do a check of the inverter message.
4005		 #1234	Wrong inverter type or firmware	U101, U102, U301, U302	--
				Incorrect inverter type	Check if the correct inverter types with the correct firmware and interface modules are installed in data screen 7.2.3.
4013			Waiting for request for combed-material extraction	XD21:21	--
				Request signal from Blowroom is not set	Activate request signal.
4045			Top comb is installed incorrectly	S140 – S144, S240 – S243	--
				Top combs are not installed but ignored by button.	Install the top combs correctly.
4201			Empty can is missing	B305	--
				Empty can is missing and the can is almost full.	Put a can.
4202			SERVOtrolley is missing	B128, B228	--
				SERVOtrolley is missing and laps are almost empty.	Put a trolley.

Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
4458			Sliver ramp entry Cylinder is too fast	B303	--
				Settings of drafting system pulleys are incorrect.	Do a check of the settings for NW1, NW2, W1, W2, and W3.
4459			Sliver ramp entry Cylinder is too slow	B303	--
				Settings of drafting system pulleys are incorrect.	Do a check of the settings for NW1, NW2, W1, W2, and W3.
4501			ROBOlap Batt suction is occupied	K222	--
				ROBOlap is waiting for the suction system.	Wait
4502			Laps are empty	B121 – B224, B221 – B224	--
				Laps are empty.	Supply and thread new laps.
4600			Waiting for tube removal	B230	--
				ROBOlap is waiting for SERVOlap.	Wait
4601			Waiting for laps	B127, B227	--
				ROBOlap is waiting for SERVOlap.	Wait

Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
4602			Sensor "Lap carrier is occupied" is blocked	B127, B227	--
				SERVOlap cannot deliver laps because the sensor on the lap carrier is blocked.	Remove the blockage.
4701			A% measurement is not active	B304, B295	--
				A% measurement is deactivated or not calibrated. Waning! A missing sliver will not be detected!	Set up A% monitoring.
4702			A% is out of range	B304, B295	--
				A% is out of range but **Reaction to A % monitoring** is set to Warning. Warning! A missing sliver will not be detected!	Set up A% monitoring.
4703			Too many thick places were found	B295	--
				The drafting area is not clean.	– Check and clean the bottom wipers of drafting system. – Check and clean the top wipers of suction unit. – Clean the web funnel and nozzle.
				The combing head is not clean.	Clean the combing head. – Deflection top roller – Web bowl – Top comb and nipper

Fault Code	Location	Fault Symbol	Fault Text	Fault Cause	Remedy
				Feeding procedure is incorrect.	– Check the alignment of the ratchet wheels. – Check the pawls tension.
				Circular comb condition	– Clean the circular comb. – Check the speed and condition of the circular-comb brush. – Check the wires of the circular comb. If most of the wires are damaged, replace the circular comb.
				Fly duct cover is not attached correctly.	– Check all the fly duct covers. – Attach the fly duct cover (*refer to* ▸ *322*).
				Low quality of the feed material	Check the lap quality.

8.4 Faults not Shown on the Display

This section contains the information about the faults that are not shown on the data screen. The faults are given regarding the machine components.

8.4.1 Piecing Peak in the Spectrogram

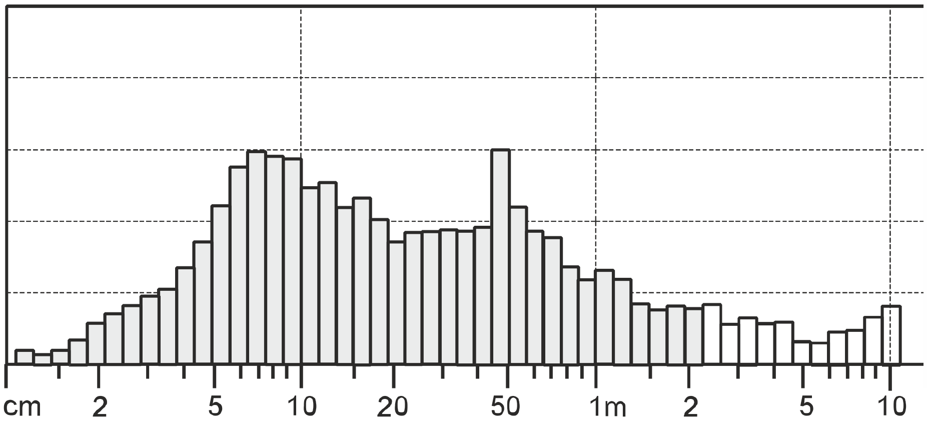


Figure 512: Piecing peak in the spectrogram

The piecing peak agrees with the wavelength of the piecing. The piecing peak must not be higher than the basic spectrum by more than 50 %.

Fault	Cause	Remedy
A piecing peak occurred.	A test of the sliver evenness is done in the laboratory.	Make the piecing of the fiber fringe to the web fleece better. (*refer to* ▸ *399*)
	A mechanical cause for sliver unevenness occurred.	– Make the piecing of the fiber fringe to the web fleece better. (*refer to* ▸ *399*) – Make a spectrogram for sliver from 1 head. (The piecing is to occur at a distance of approximately 2.87 cm. If not, the peak could have a different cause.)

8.4.2 Peak at >2.5 m in the Spectrogram of the Finisher Draw Frame

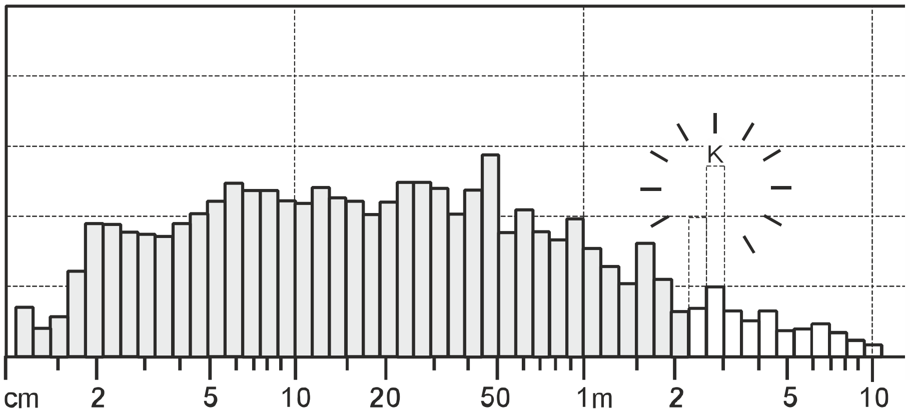


Figure 513: Peak in the spectrogram

A test of the sliver evenness of the finisher draw frame is done in the laboratory. During the test, the measured results are shown as a spectrogram and a diagram.

Fault	Cause	Remedy
A peak occurred at > 2.5 m	The piecing period is too long or too short.	Make the piecing of the fiber fringe to the web fleece better. (*refer to ▸ 399*)

8.4.3 Sliver Break Length

The sliver break length is to be sufficient long to make sure that:

- The combed sliver is sufficient strong during the subsequent processing.
- No incorrect drafts occur when the sliver is pulled out of the can.

Fault	Cause	Remedy
The sliver break length is not sufficient.	The fiber position is incorrect.	– Set the drafting system distance. (A longer distance causes a longer sliver break length.) – Set the break draft. (A shorter break draft causes a longer sliver break length.)

Fault	Cause	Remedy
	The sliver compression is too weak.	– Use the related sliver funnel (for the drafting-system rollers at the web collection device). – Set the contact force of the drafting-system rollers. – Use the related sliver funnel. – Set the contact force of the delivery discs.

8.4.4 Feed Unit

Fault	Cause	Remedy
The batt tension is incorrect: The feed cylinder in the nipper does not move the batt correctly.	The feed trough plate is 1-sided.	Set the feed trough plate (*refer to* ▶ *579*).
	The batt tension is incorrect.	– Adjust the batt tension (**Option**: Manual batt piecing) (*refer to* ▶ *396*). – Adjust the batt tension (**Option**: ROBOlap) (*refer to* ▶ *397*).

8.4.5 Combing Section

Fault	Cause	Remedy
The circular comb is full of dust and fibers.	The meshing depth of the circular comb brush is not sufficient.	– Do a check of the meshing depth of the circular-comb brush. – Set the meshing depth of the circular-comb brush (*refer to* ▶ *557*).
	The cleaning intensity of the circular-comb brush is not sufficient.	Set the meshing depth of the circular-comb brush (*refer to* ▶ *557*).
	The cleaning intervals for the circular-comb brush are too long.	– Go to the data screen 1.5.1.2 **Circular-comb cleaning**. – Decrease the cleaning cycle time. – Increase the cleaning time.

8.4.6 Drafting System

Fault	Cause	Remedy
Lap frequently blocks at top roller.	The top roller cots are tacky.	– Clean the drafting system – Clean the top roller cots. – Apply chalk powder to the top roller cots.
	The top roller cots are worn.	Do a check of the top roller cots.
	The relative humidity for the drafting procedure is too high or too low.	Make sure that the temperature is between 28 and 30°. Make sure that the relative humidity is 45 %.
	The relative humidity for cotton with honeydew or cotton with high wax content is too high or too low.	Make sure that the temperature is ≥ 35°. Make sure that the relative humidity is ≤ 33 %.
	The top rollers are charged electrostatically.	Make sure that the absolute humidity is sufficient (> 10 g/cm³).
The web is broken in the drafting system after a power outage.	The pressure is released too quickly from the top rollers.	Set the time for the pressure to be released from the top rollers.

8.4.7 Can Changer

Fault	Cause	Remedy
The sliver is not cut.	The contact pressure of the sliver column at the coiler is not sufficient.	– Increase the can filling. – Set the can filling. – Make sure that the spring plate in the can is pushed up sufficiently strong.
	The stop position of the coiler wheel is incorrect.	Set the stop position of the coiler. (*refer to* ▸ *354*)
	The sliver cutter is disconnected.	Start the sliver cutter on the data screen. .
The sliver is cut 2 times.	The sliver cutter moves too slowly.	– Decrease the damping. – Set the speed of the sliver cutter.
	The sliver cutter has an interval.	Close the sliver cutter interval on the data screen.
	The can is ejected too quickly.	Set the speed of the can changer.

9 Maintenance

This chapter contains information about:

- The cleaning work of the machine
- The lubrication of the machine
- The inspection of the machine

More information about the electric devices and pneumatic devices is to be found in the electrical documentation.

9.1 Maintenance Personnel

Only Rieter-approved personnel are permitted to do maintenance work at the machine.

9.2 Interval Specification

The intervals that follow are guide values.

Interval Specification	Duration in 3-Shift Operation
165 operating hours	1 week
330 operating hours	2 weeks
660 operating hours	4 weeks
1 320 operating hours	8 weeks
2 000 operating hours	3 months
4 000 operating hours	6 months
8 000 operating hours	1 year
16 000 operating hours	2 years
24 000 operating hours	3 years
32 000 operating hours	4 years

9.3 Service Life Information

Wear parts have a service life limit and a warranty period limit.

The information on the service life of the wear parts is the minimum service life that is possible from the moment the machine is sent to the customer.

The individual drafting system settings on the machine, the ambient conditions, and the raw material that is used have an effect on the service life.

Technology Part	Service Life with Middle-Staple Cotton	Service Life with Long-Staple Cotton
Circular comb	1 500 t or 3 years*	1 000 t or 3 years*
Top comb	750 t or 1.5 years*	500 t or 1.5 years*

Technology Part	Service Life with Middle-Staple Cotton	Service Life with Long-Staple Cotton
Clearer rollers	8 000 h	8 000 h
Circular-comb brush	500 t	300 t
Cots of the detaching top rollers	8 000 h	8 000 h
Top roller cots (subject to grinding)	500 h	500 h
*applicable is the value that the technology part is at first		

Table 11: Service life for technology part

Wear Part and Tear Part	Service Life
Main-drive belt	4 000 h
Wheel drive of the V-belt funnel	8 000 h
Toothed belt of delivery unit	4 000 h
Flat belt of the delivery unit	4 000 h
Top transport belt	8 000 h
Top-comb holder	8 000 h
Ratchet wheel	8 000 h
Gas pressure springs	8 000 h
Compressed-air filter insert	8 000 h
Top roller bearings	2 000 h
Pneumatic-cylinder seal	16 000 h
Clearer lips of the top rollers	2 000 h
Clearer lips of the drafting-system cylinders	2 000 h
Wiper feeding roller	8 000 h
Main motor of the disk brake	8 000 h
Pressure bar	4 000 h
Sliver guide (all types)	4 000 h
Web funnel	4 000 h
Web funnel insert	4 000 h
Sliver funnel	4 000 h
Delivery disks	4 000 h
Revolving plate at coiler	4 000 h
Sliver duct	4 000 h
Sealing pressure aggregate	8 000 h
Torsion spring of the ratchet wheel	8 000 h

Wear Part and Tear Part	Service Life
Felt wiper (take-off cylinder)	8 000 h
V-belt of the delivery unit	4 000 h
Ribbed V-belt of the delivery unit	4 000 h

Table 12: Service life for wear parts and tear parts

9.4 Protocol for the Safety Circuit

Each replaced safety device is recorded in the protocol for the safety circuit.

The steps to replace the safety devices are as follows:

1. Identify each safety device in the electrical documentation.
2. To replace a safety device, refer to the operation manual. Replace the related safety devices fully.
3. To do the function test of each replaced safety device, refer to the related description in this chapter.

Example of a protocol for the safety circuit:

Date	Device Tag	Location	Description	Name	Initials
01-01-2015	S8	= SLO + EC1	The emergency stop button is replaced because the red push-button has mechanical damage.	J. Meyer	JM
01-07-2016			A function test of the safety circuit is done during the commissioning.	Field Engineer	FE
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--

9.5 Notice on the Machine Gearbox

The machine gearbox 1 is in the head stock.

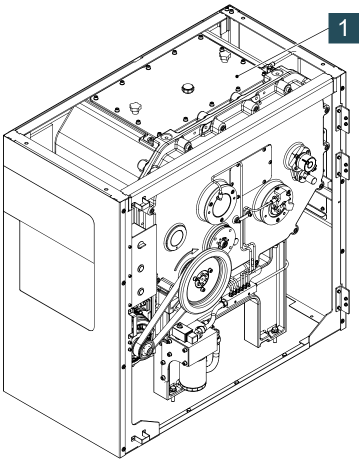


Figure 514: Cover of the gearbox

Only Rieter personnel or Rieter-approved personnel are permitted to adjust or change the settings in the gearbox. If 1 seal of the seals 2 at the gearbox is defective, Rieter does not accept any liability for damage to the gear unit.

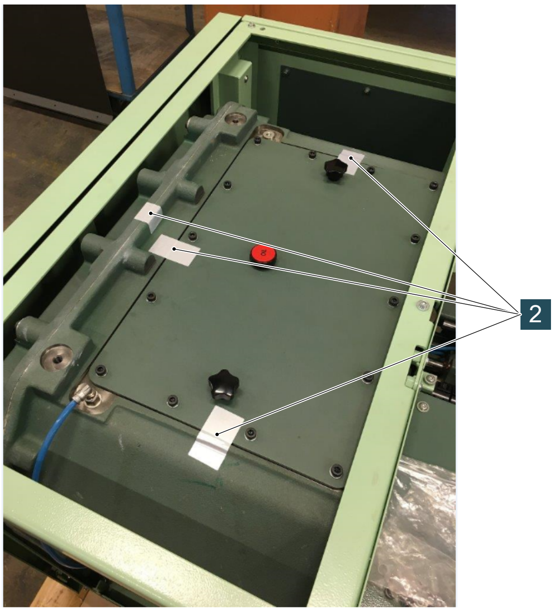


Figure 515: Seals at the gearbox

NOTICE

Modification or setting in the gear box!

Damage to the gear unit

▶ Do not modify anything or change settings in the gear box.

9.6 Lubricants

This chapter contains the information about the lubricants for this machine.

Lubricants

NLGI 2/1 (EP2) – Semi-synthetic Grease

Property	Specifications
Consistency class (DIN 51818)	2/1
Dripping point (DIN ISO 2176)	180 – 190 ℃
Operating-temperature range	−25 – +150 ℃

ISO VG 150 (CC150) - Mineral Gear Oil

Property	Specifications
Consistency class (DIN 51562)	150
FZG-Test (A/8.3/90 DIN 51354) damage force level	> 14
Temperature range (operation)	-5 – +100 ℃

NLGI 2/1 (S22) - Mineral Grease

Property	Specifications
Consistency class (DIN 51818)	2/1
FZG-Test (A/8.3/90 DIN 51354) damage force level	> 14
Dripping point (DIN ISO 2176)	180 – 190 ℃
Operating-temperature range	−40 – +120 ℃

NLGI 3 (K3) – Mineral Grease

Property	Specifications
Consistency class (DIN 51818)	3
Dripping point (DIN ISO 2176)	> 190 ℃
Operating-temperature range	–15 – +150 ℃

ISO VG 150 (S14) – Synthetic Oil

Property	Specifications
Consistency class (DIN ISO 51562)	150
FZG-Test (A/8.3/90 DIN 51354) damage force level	> 13

Supplier

Lubricant	Lubricant Class	Supplier	Name
EP2 Synthetic grease	NLGI 2/1	AGIP	GR MU EP 2
		AVIA	AVIALITH 2 EP
		BP	ENERGREASE LS-EP 2
		CASTROL	SPHEEROL EPL 2

Lubricant	Lubricant Class	Supplier	Name
		EXXON MOBILE	MOBILUX EP 2
		KLÜBER	MICROLUBE GBU-Y 131
		LAGERMEISTER	LAGERMEISTER TS
		PETRO CANADA	PRECISION GENERAL PURPOSE EP 2
		SHELL	GADUS S2 V220 2
		TEXACO	MULTIFAK EP 2
CC150 Mineral gear oil	ISO VG 150	AGIP	BLASIA 150
		AVIA	AVIA GEAR RSX 150
		BP	ENERGOL GR-XP 150
		CASTROL	ALPHA SP 150
		EXXON MOBILE	MOBILGEAR 600 XP 150
		KLÜBER	KLÜBEROIL GEM 1–150 N
		OPTIMOL	OPTIGEAR BM 150
		PETRO CANADA	ENDURATEX EP 150
		SHELL	OMALA S2 G 150
		TEXACO	MEROPA 150
		VALVOLINE	EPG 150
S22 Mineral grease	NLGI 2/1	CASTROL	LONGTIME HS 1.5
		FUCHS	URETHYN LT 60
		KLÜBER	KLÜBERPLEX BEM 41-132 ISOFLEX LDS 18 SPECIAL A ISOFLEX NBU 15 ISOFLEX NCA 15
		SHELL	AEROSHELL GREASE 33
		VALVOLINE	CALBASE AR-2
K3 Mineral grease	NLGI 3	AVIA	AVIALITH 3 EP
		BP	ENERGREASE LS 3
		CASTROL	SPHEEROL AP 3
		ESSO	UNIREX N3 BEACON EP 3
		EXXON MOBILE	UNIREX N3 MULTILUX EP 3
		KLÜBER	CENTOPLEX 3

Lubricant	Lubricant Class	Supplier	Name
		PETRO CANADA	PRECISION XL EMB
		SHELL	GADUS S2 V100 3
		TEXACO	MULTIFAK PREMIUM 3
S14 Synthetic oil	ISO VG 150	BP	VISCO 5000
		EXXON MOBILE	MOBIL SHC 629
		RIETER	Ri-Q-COMBO
		SHELL	OMALA S 4 GX 150

9.7 Cleaning Table by Cycle

Target group	Cleaning cycle	Additional information	
Operator	Cleaning related to the material	9.10.1	Cleaning the Pressure Bar
		9.10.2	Cleaning the Guide Rails
		9.10.3	Cleaning the Timing Belts on the Actuator
		9.10.4	Cleaning the Adjusting Spindles
		9.10.5	Cleaning the Clearer Lips of the Drafting System Cylinders
		9.10.6	Cleaning the Clearer Lips of the Top Rollers
		9.10.7	Cleaning the Top Rollers
		9.10.8	Cleaning the Web Guides
		9.10.9	Cleaning the Web Funnel Insert
		9.10.10	Cleaning the Sliver Funnel
		9.10.11	Cleaning the Sliver Jam Sensor
		9.10.12	Cleaning the Sliver Duct in the Coiler
		9.10.13	Cleaning the Can Changer
		9.10.14	Cleaning the Control Cabinet
		9.10.15	Cleaning the Frequency Converter
		9.10.16	Cleaning the Table Funnel
		9.10.17	Cleaning the Top Combs
	Cleaning each 4 h	9.10.19	Cleaning the Cleaning Brush of the Top Detaching Rollers
	Cleaning each 8 h	9.10.20	Cleaning the Head Stock Filters
	Cleaning each 165 h	9.10.21	Cleaning the Technology Components of the Combing Unit

Target group	Cleaning cycle	Additional information	
	Cleaning each 330 h	9.10.22	Cleaning the Rear Side of the Combing Unit
		9.10.23	Cleaning the Wiper and the Fly Duct
		9.10.24	Cleaning the Technology Components of the Coiler
		9.10.25	Cleaning the Belt Drive of the Lap Roller (ROBOlap)
	Cleaning each 1 320 h	9.10.26	Cleaning the Circular Comb
	Cleaning each 8 000 h	9.10.28	Cleaning the Motor Fan
Maintenance Personnel	Cleaning related to the material	9.10.18	Cleaning the Flat Belts
	Cleaning each 4 000 h	9.10.27	Cleaning the Air Cooler

9.8 Lubrication Table by Cycle

Target group	Lubrication cycle	Additional information	
Maintenance Personnel	Lubrication each 330 h	9.11.1	Lubricating the Needle Roller Bearing of the Top Detaching Roller
	Lubrication each 1 320 h	9.11.2	Lubricating the Central Shafts on the Rear Side of the Comber
		9.11.3	Lubricating the Central Shafts on the Front Side of the Comber
		9.11.4	Lubricating the Nipper
		9.11.4.1	Lubricating the Bushes of the Feed Roller
		9.11.5	Lubricating the Carrier Rollers (with ROBOlap)
		9.11.6	Lubricating the Bushings of the Delivery Roller
	Lubrication each 1 500 h	9.11.7.1	Lubricating the Lubrication Points 1 – 10
		9.11.7.2	Lubricate the Lubrication Point 11

9.9 Inspection Table by Cycle

Target group	Inspection cycle	Additional information	
Maintenance Personnel	Inspection each 12 000 h	9.12.10	Doing a Check of the Ball Bearings of the Top Rollers
	Inspection each 24 000 h	9.12.11	Changing the Filter of the Filter Unit
		9.12.12	Changing the Oil of the Gearbox

Target group	Inspection cycle	Additional information	
Inspector	Inspection each 165 h	9.12.1	Doing a Check of the Clearer Lips of the Top Rollers
		9.12.2	Doing a Check of the Clearer Lips of the Drafting System Cylinders
	Inspection each 660 h	9.12.3	Doing a Check of the Belt Drive of the Lap Roller
		9.12.4	Doing a Check of the Belts Drive of the Carrier Roller
		9.12.5	Doing a Check of the Tension of the Main-Drive Belt
		9.12.6	Doing a Check of the Top Roller Cots
	Inspection each 1 320 h	9.12.7	Doing a Check of the Oil Level in the Gearbox
		9.12.8	Doing a Check of the Detaching Roller Wiper
	Inspection each 8 000 h	9.12.9	Doing the Function Test of the Safety Relay

9.10 Cleaning Tasks

This chapter contains information about how to clean the machine.

9.10.1 Cleaning the Pressure Bar

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Lift the pressure bar 1.

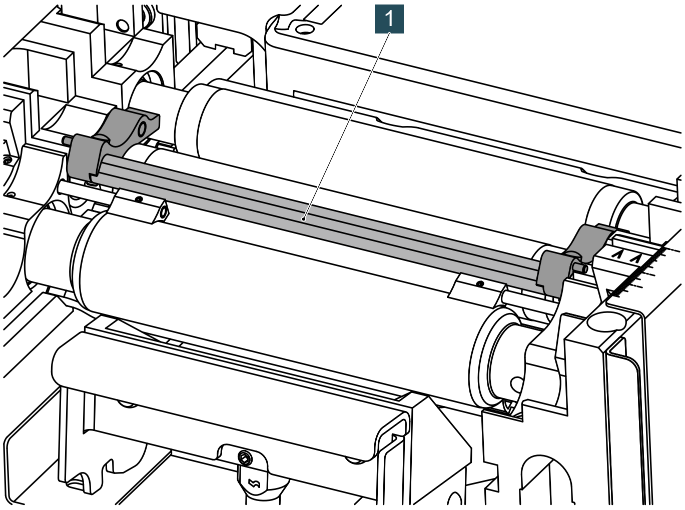


Figure 516: Pressure bar

2. Clean the pressure bar 1.

Result The pressure bar is cleaned.

9.10.2 Cleaning the Guide Rails

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Lift and remove the sliver guide.
2. Clean the guide rails 1.

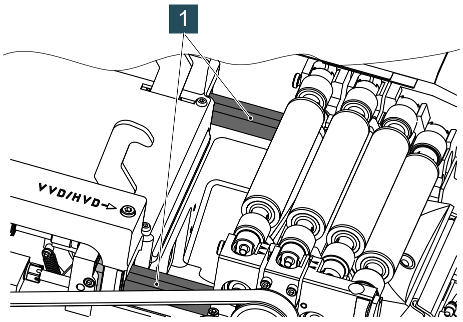


Figure 517: Guide rails

3. Install the sliver guide to the end stop.

Result The guide rails are cleaned.

9.10.3 Cleaning the Timing Belts on the Actuator

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

CAUTION

The loading arm falls down!

Danger of crushing the hands when the loading arm falls down

- ▶ Do **NOT** put the hands below the loading arm when the loading arm is lowered.

1. Open the drafting system hood.
2. Open the left hood.
3. Move up the top roller unit.
4. Remove the cotton from the drafting system.
5. Remove the web guide.
6. Remove the sliver guide.
7. Remove the cover.
8. Clean the toothed belts **1**.

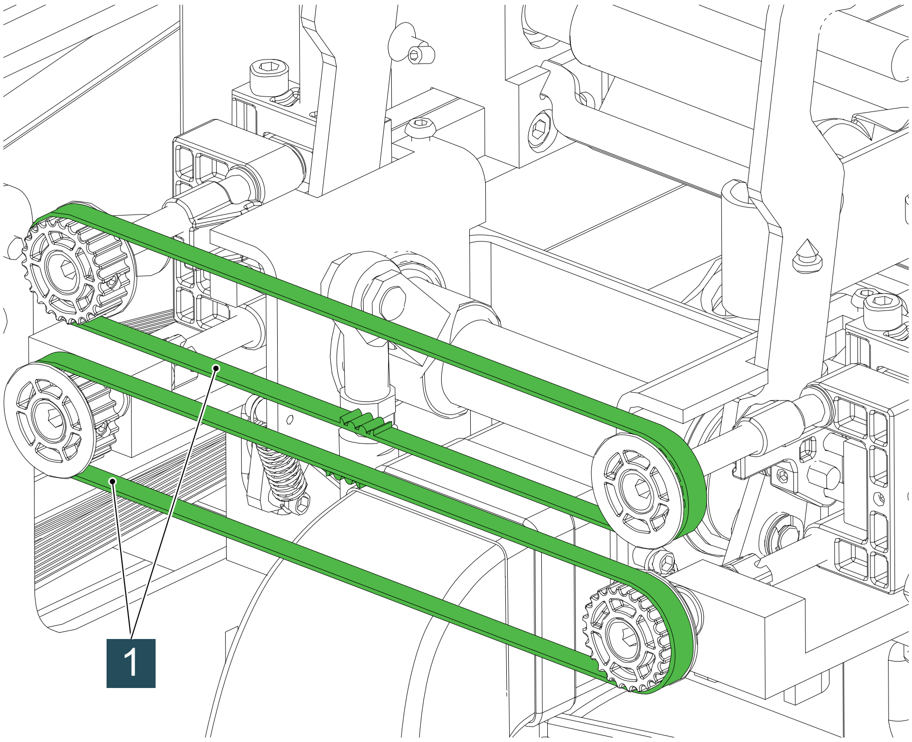


Figure 518: Timing belts on the actuator

9. Install the cover.
10. Install the sliver guide.
11. Install the web guide.

12. **CAUTION! The top roller unit falls down! Danger of crushing the hands when the top roller unit falls down.** Move down the top roller unit.
13. Close the left hood.
14. Close the drafting system hood.

Result The timing belts on the actuator are cleaned.

9.10.4 Cleaning the Adjusting Spindles

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Lift and remove the sliver guide.
2. Remove the web guide.
3. Remove the cover.
4. Clean the adjusting spindles 1 and 2 at the machine.

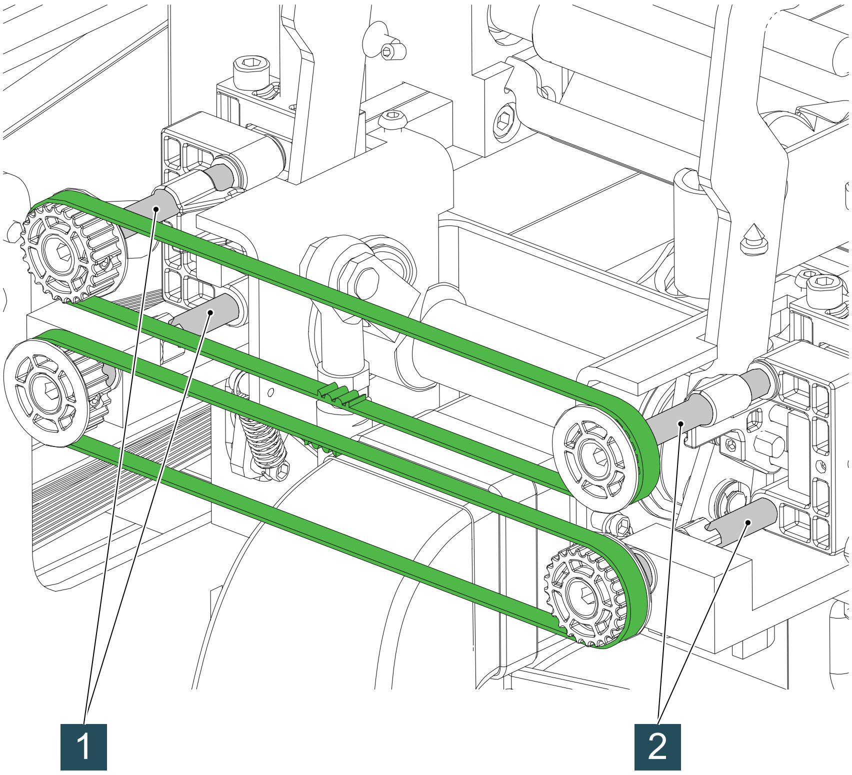


Figure 519: Adjusting spindles

5. Install the cover.
6. Install the web guide.
7. Install the sliver guide to the end stop.

Result The adjusting spindles are cleaned.

9.10.5 Cleaning the Clearer Lips of the Drafting System Cylinders

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Remove the clearer lips 1 from the drafting system cylinders (*refer to* ▸ *604*).

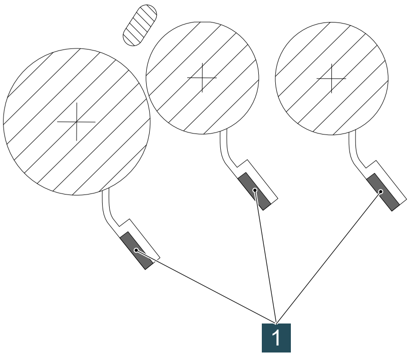


Figure 520: Clearer lips at the drafting system cylinders

2. Clean the clearer lips 1.
3. Do a check of the clearer lips 1.
4. If the clearer lips are worn, replace the clearer lips 1.
5. Install the clearer lips 1 on the drafting system cylinders (*refer to* ▸ *604*).
6. If the clearer lips do not touch the cylinders lightly, replace the clearer lips 1.

Result The clearer lips of the drafting system cylinders are cleaned.

9.10.6 Cleaning the Clearer Lips of the Top Rollers

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Open the drafting system hood.
2. Clean the clearer lips 2, 3, and 4 at the suction head 1.

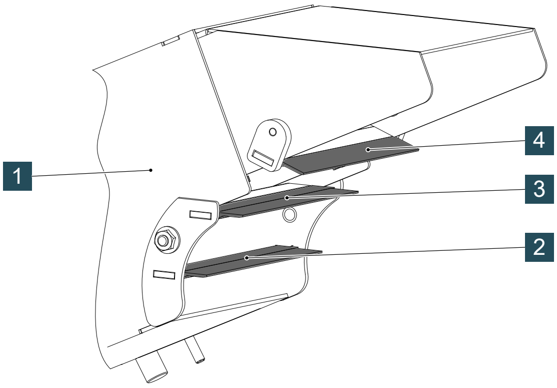


Figure 521: Clearer lips of the top rollers

3. Do a check of the clearer lips 2, 3, and 4.
4. If the clearer lip 2, 3 or 4 is worn, replace the worn clearer lip.
5. If the clearer lip 2, 3 or 4 does not touch the top roller lightly, adjust the clearer lip.

Result The clearer lips of the top rollers are cleaned.

9.10.7 Cleaning the Top Rollers

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Remove the top rollers 1, 2, 3, and 4 (*refer to* ▸ *596*).

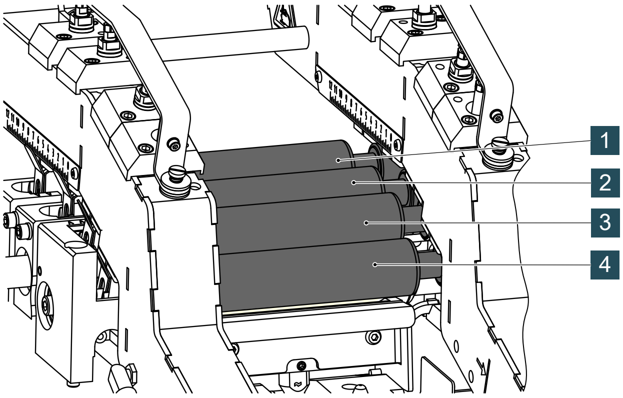


Figure 522: Top rollers

2. Clean the top rollers 1, 2, 3, and 4.
3. Install the top rollers 1, 2, 3, and 4 (*refer to* ▸ *596*).

Result The top rollers are cleaned.

9.10.8 Cleaning the Web Guides

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Remove the 2 web guides 1 (*refer to* ▸ *598*).

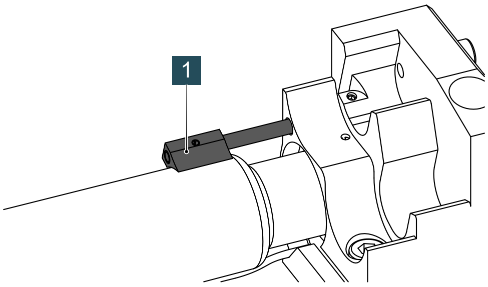


Figure 523: Web guides

2. Clean the web guides at regular intervals.
3. If the web guides are worn, replace the web guides.
4. Install the web guides (*refer to* ▸ *598*).

Result The web guides are cleaned.

9.10.9 Cleaning the Web Funnel Insert

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

⚠ **CAUTION**

Falling loading arm!

Risk of crushing the hands

▶ Do NOT put the hands below the loading arm when the loading arm becomes lowered.

1. Open the drafting system hood.
2. Move up the unlocked top roller unit.
3. Turn forward the web funnel 1 and remove the web funnel 1.

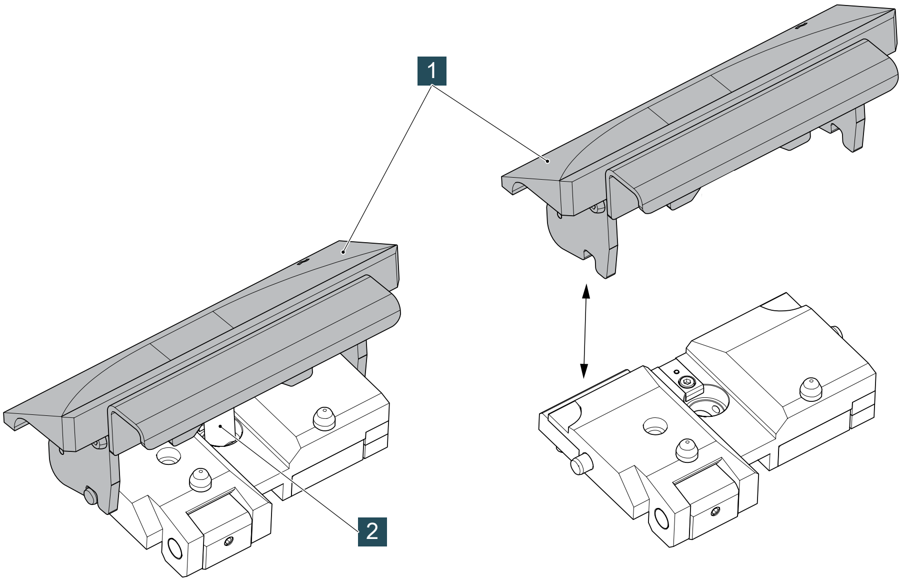


Figure 524: Web funnel with web funnel insert

4. Remove the web funnel insert 2 from the holder.
5. Clean the inner surface of the web nozzle insert 2.
6. Put the web funnel insert 2 into the holder 1.
7. Install the web funnel 1.

8. **CAUTION! Falling loading arm! Risk of crushing the hands.** Move down the top roller unit.
9. Close the drafting system hood.

Result The web funnel insert is cleaned.

9.10.10 Cleaning the Sliver Funnel

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Remove the sliver funnel 2.

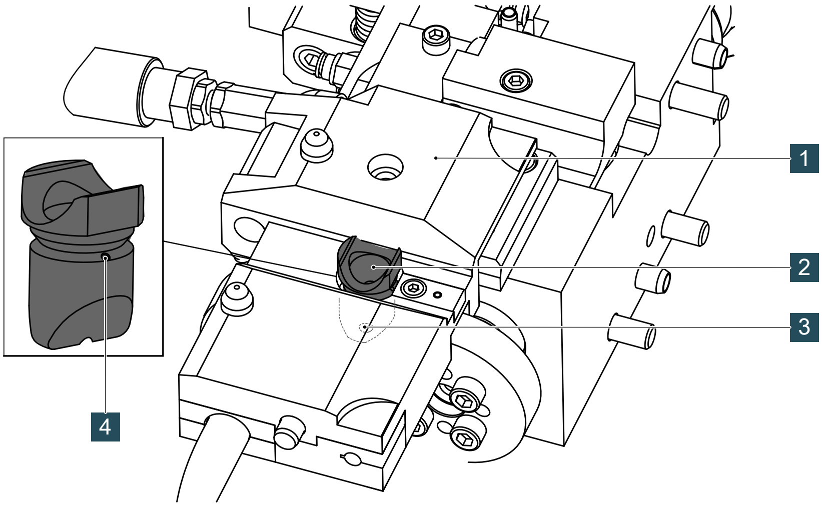


Figure 525: Sliver funnel

2. Clean the inner surface of the sliver funnel 2.
3. Clean the injector holes 4.
4. Clean the compressed-air hole 3 in the swivel plate 1.
5. Install the sliver funnel 2.

Result The sliver funnel is cleaned.

9.10.11 Cleaning the Sliver Jam Sensor

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Remove the web funnel 1.

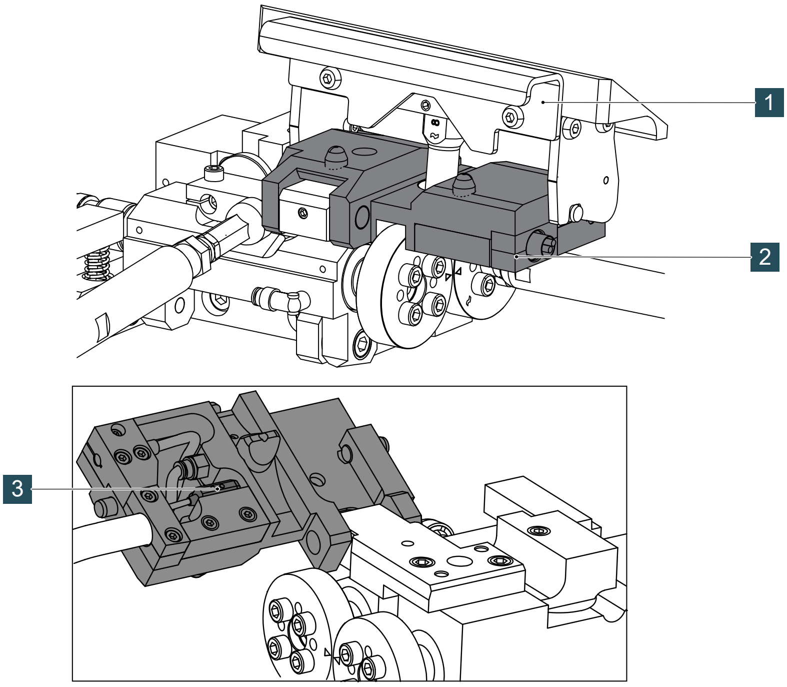


Figure 526: Optical sliver jam sensor

2. Turn the swivel plate 2 around the swivel axis.
3. Clean the area around the sliver jam sensor 3.
4. Turn the swivel plate 2 back to the initial position.
5. Install the web funnel 1.

Result The sliver jam sensor is cleaned.

9.10.12 Cleaning the Sliver Duct in the Coiler

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ A cleaner bar is to be used.

1. Select the cleaner bar in accordance with the diameter of the used sliver duct.
2. Clean the sliver duct 1 with the selected cleaner bar.

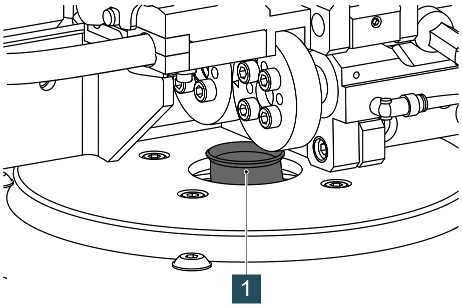


Figure 527: Sliver duct in the coiler

3. Unlock the main switch.

Result The sliver duct in the coiler is cleaned.

9.10.13 Cleaning the Can Changer

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Clean the can changer.

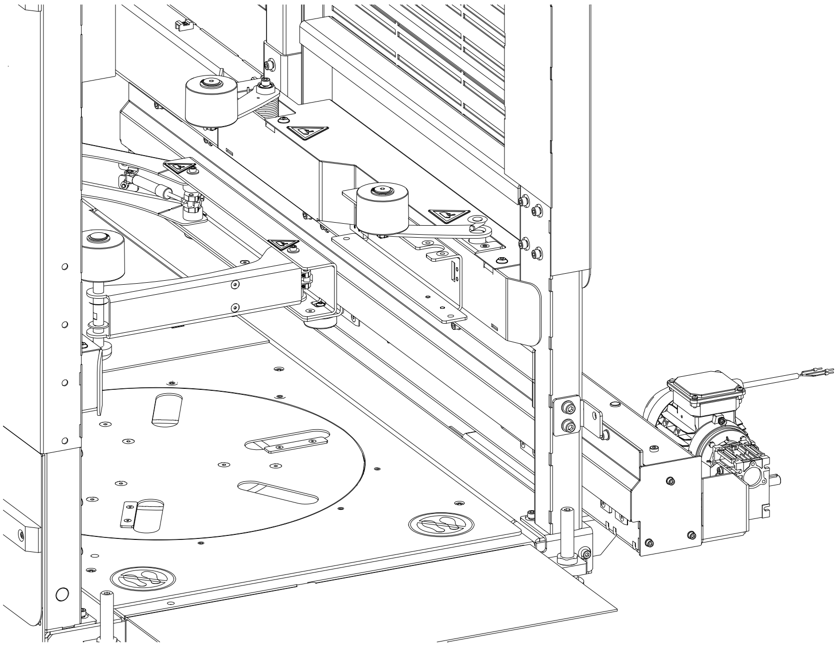


Figure 528: Can changer

Result The can changer is cleaned.

9.10.14 Cleaning the Control Cabinet

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Open the control cabinet 1.

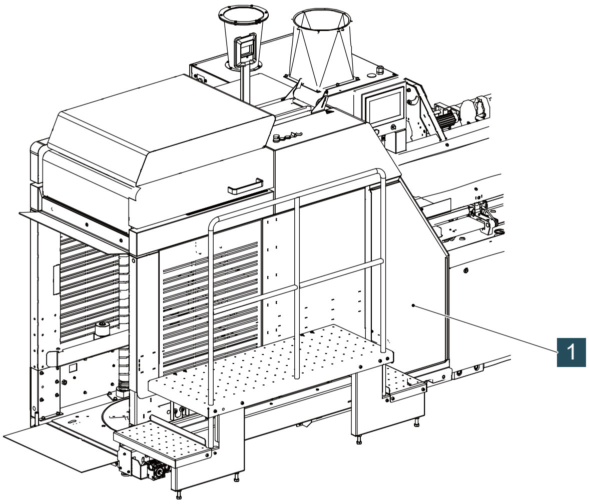


Figure 529: Control cabinet

2. Clean the inner side of the control cabinet 1 and the devices in the control cabinet.
3. Close the control cabinet 1.
4. Unlock the main switch.

Result The control cabinet is cleaned.

9.10.15 Cleaning the Frequency Converter

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

⚠ **DANGER**

Remaining electricity in the frequency converter!

Death or dangerous burn injury through the electric shock

▶ Set the main switch to the position OFF. Padlock the main switch.

▶ Do **NOT** touch the device that has remaining electricity until the LED for the charge display is off.

▶ Wait for 10 min until the frequency converter voltage becomes 0 V.

▶ Do **NOT** touch the device during the discharge time.

1. Open the control cabinet door.

DANGER

Remaining electricity in the frequency converter!

Death or dangerous burn injury through the electric shock

- Set the main switch to the position OFF. Padlock the main switch.
- Do **NOT** touch the device that has remaining electricity until the LED for the charge display is off.
- Wait for 10 min until the frequency converter voltage becomes 0 V.
- Do **NOT** touch the device during the discharge time.

2. Clean the frequency converter.
3. Close the control cabinet door.
4. Unlock the main switch.

Result The frequency converter is cleaned.

9.10.16 Cleaning the Table Funnel

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. Tilt the draw-off table 1 in the direction of the arrow.

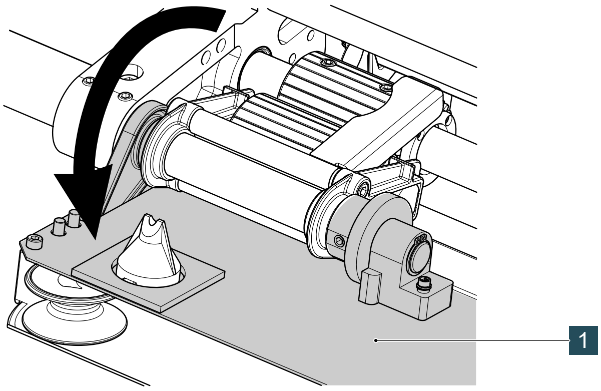


Figure 530: Draw-off table

2. To remove the funnel 2, turn the funnel 2 counterclockwise.

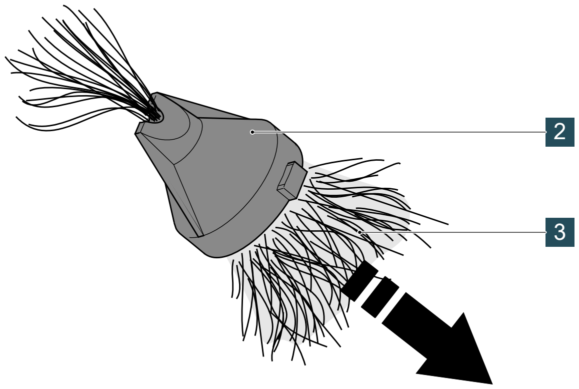


Figure 531: Fibers in the funnel

3. Hold the fibers 3 on the wide side of the funnel 2.
4. Turn the fibers 3 as tightly as possible.
5. Pull out the fibers 3 from the wide side of the funnel 2.

Result The table funnel is cleaned.

9.10.17 Cleaning the Top Combs

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

⚠ WARNING

Sharp teeth of top comb!

Risk of the hand injury or cut.

▶ Work with top combs carefully.

1. Remove the top comb.
2. Attach the top comb cleaner 1 to the top-comb needles 2.

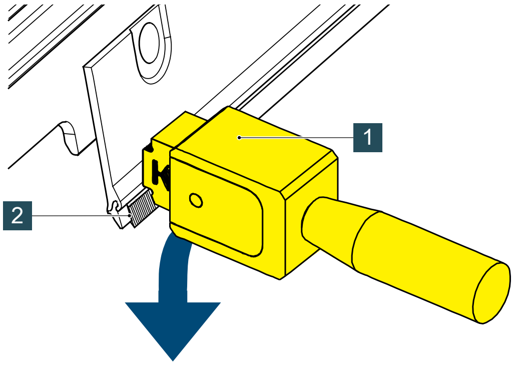


Figure 532: Cleaning the top combs

3. To remove the dirt and seed coat fragments from the top-comb needles, move the top-comb cleaner 1 through the top comb needles 2.
4. Install the top comb.

Result The top combs are cleaned.

9.10.18 Cleaning the Flat Belts

The material that is used has an effect on the cleaning duration of the belts. The belts are to be cleaned latest each 165 operating hours.

If the flat belts are cleaned:

– The speed of the flat belts is constant.

– The service life of the flat belts is increased.

– The slippage of the flat belts is decreased.

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

✓ Warm water with a small quantity of soap is to be used. A soft cloth is to be used.

1. Open the drafting system hood.
2. Open the left hood and the right hood.
3. Clean all flat belts with the soft cloth and the warm water with a small quantity of soap.
4. Close the left hood and the right hood.
5. Close the drafting system hood.

Result The flat belts are cleaned.

9.10.19 Cleaning the Cleaning Brush of the Top Detaching Rollers

The cleaning trolley cleans the cleaning brushes with turning brushes. All parts on the cleaning brush are possible to be cleaned the same.

1. Remove the cleaning brush 1 from the machine.

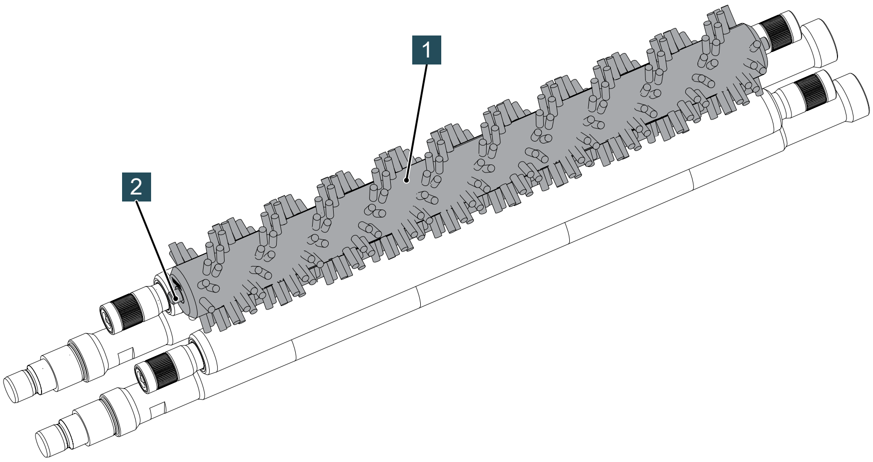


Figure 533: Cleaning brush

2. Clean the cleaning brush 1 with the cleaning trolley.
3. Do a check to see if the pins 2 are missing or worn.
   ⇨ If the pins 2 are missing or worn, the detaching rollers cleaning is less satisfactory.
4. Replace the missing or worn pins 2.
5. Put the cleaning brush 1 back in the machine.

Result The cleaning brush of the top detaching rollers is cleaned.

9.10.20 Cleaning the Head Stock Filters

Prerequisites Make sure that the criteria are obeyed:

✓ A vacuum cleaner, or a roller picker, or a dust free cloth is to be used.

1. Clean the filters 1 and 2 with the vacuum cleaner, or a roller picker, or a dust-free cloth.

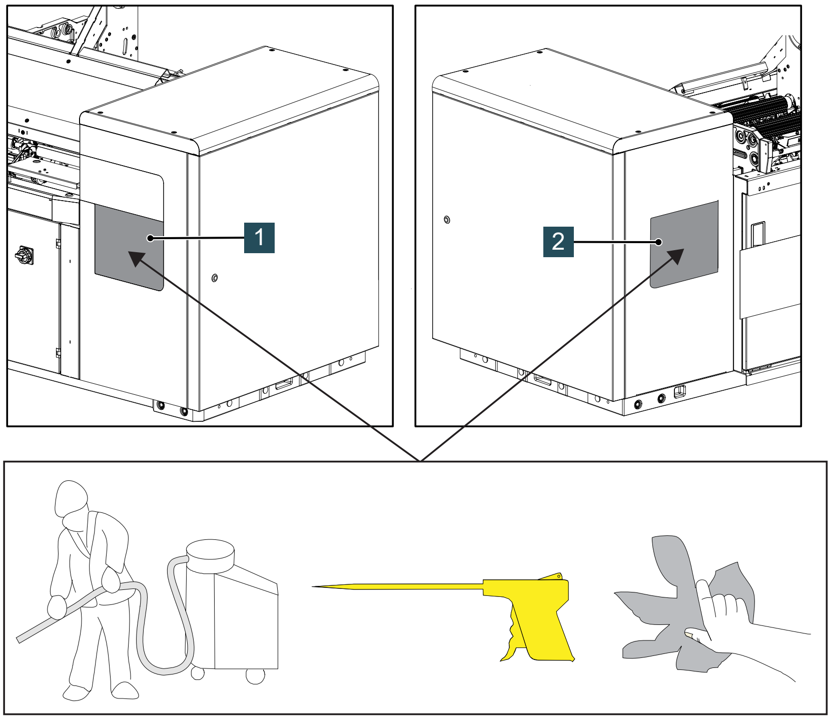


Figure 534: Head stock filters

Result The head stock filters are cleaned.

9.10.21 Cleaning the Technology Components of the Combing Unit

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ A moist cleaning cloth is to be used.
- ✓ Water is to be used.

1. Remove the cotton from the combing unit.

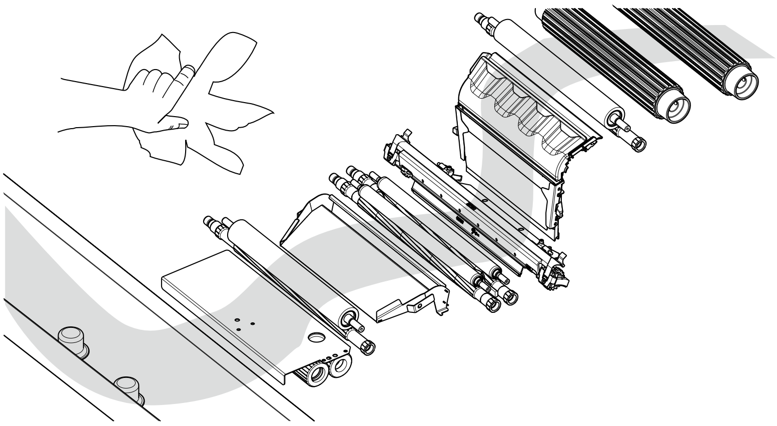


Figure 535: Technology components of the combing unit

2. Clean all parts with the applicable brush or cleaning cloth.
3. Remove the honeydew with water and a cleaning cloth.
4. Clean all technology components with a soft cotton cleaning cloth.
5. Apply chalk powder to the technology components.
6. Clean the nipper knife 1.

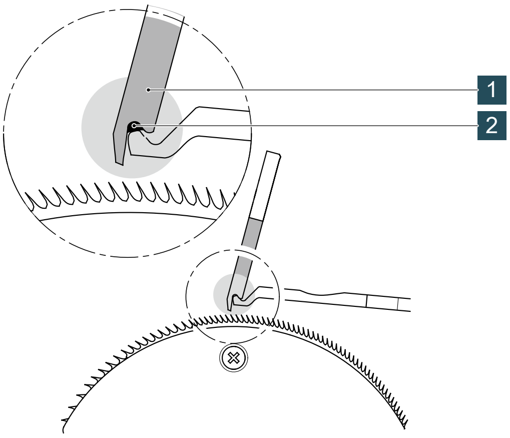


Figure 536: Nipper knife

7. Remove the collected waste 2.

Result The technology components of the combing unit are cleaned.

9.10.22 Cleaning the Rear Side of the Combing Unit

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Clean the spaces at the combing unit with the vacuum cleaner.

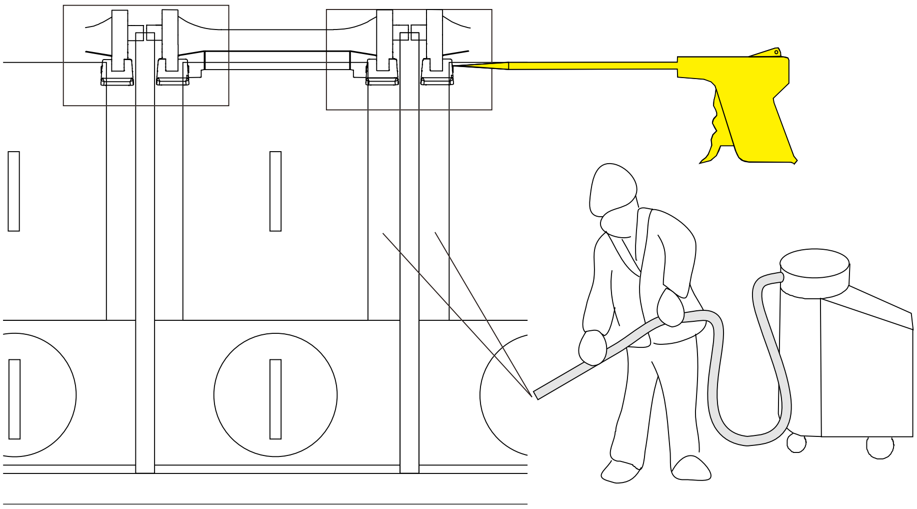


Figure 537: Rear side of the combing head

2. Clean the duct 1 with the roller picker.

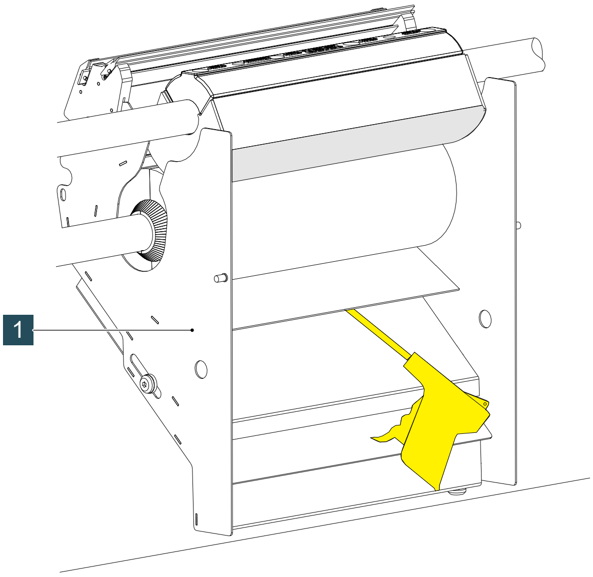


Figure 538: Rear-side duct

Result The rear side of the combing unit is cleaned.

9.10.23 Cleaning the Wiper and the Fly Duct

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. To get access to the wipers 1, remove the web bowl.

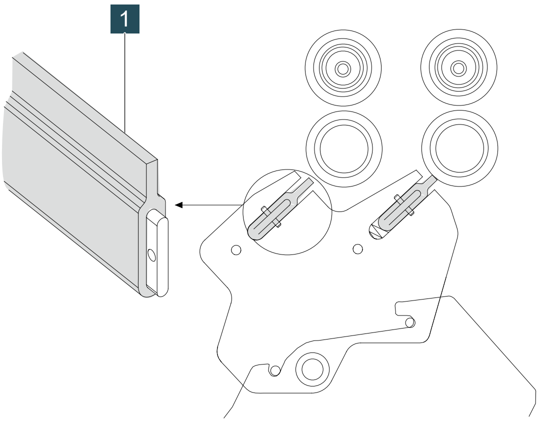


Figure 539: Wiper

2. Clean the wipers 1 of the bottom cylinder.
3. Remove the honeydew with water and a cleaning cloth.

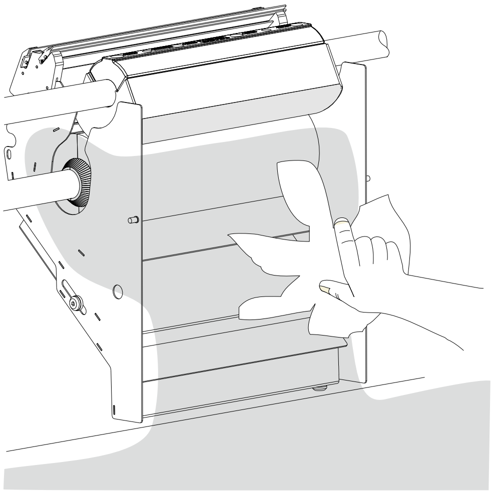


Figure 540: Fly duct

4. Clean the inner surfaces of the fly duct.
5. Clean the parts with a cleaning cloth.
6. Apply chalk powder to the technology components.

Result The wiper and the fly duct are cleaned.

9.10.24 Cleaning the Technology Components of the Coiler

Prerequisites Make sure that the criteria are obeyed:

✓ A brush, a sponge, or a cleaning cloth is to be used.
✓ A cleaner bar is to be used.

1. Remove the cotton from the delivery unit.
2. Clean all parts that come into contact with the cotton.

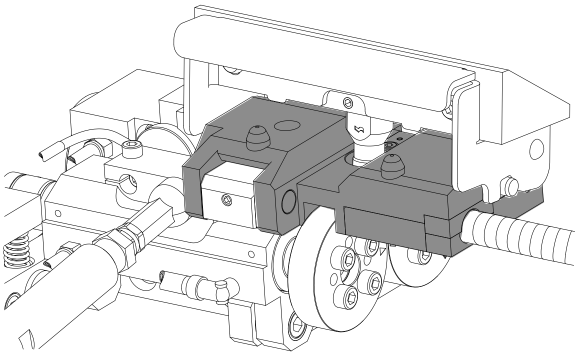


Figure 541: Technology components of the coiler

3. Clean the sliver duct in the coiler with the cleaner bar.

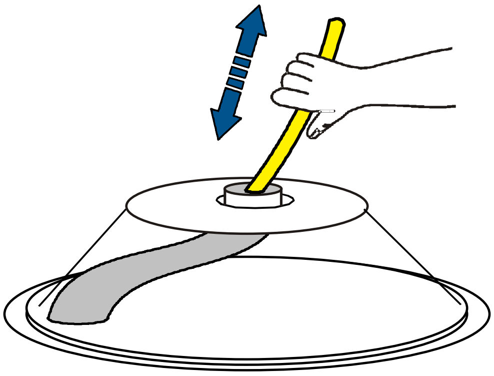


Figure 542: Sliver duct in the coiler

Result The technology components of the coiler are cleaned.

9.10.25 Cleaning the Belt Drive of the Lap Roller (ROBOlap)

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Clean the belt drive 1 with the vacuum cleaner.

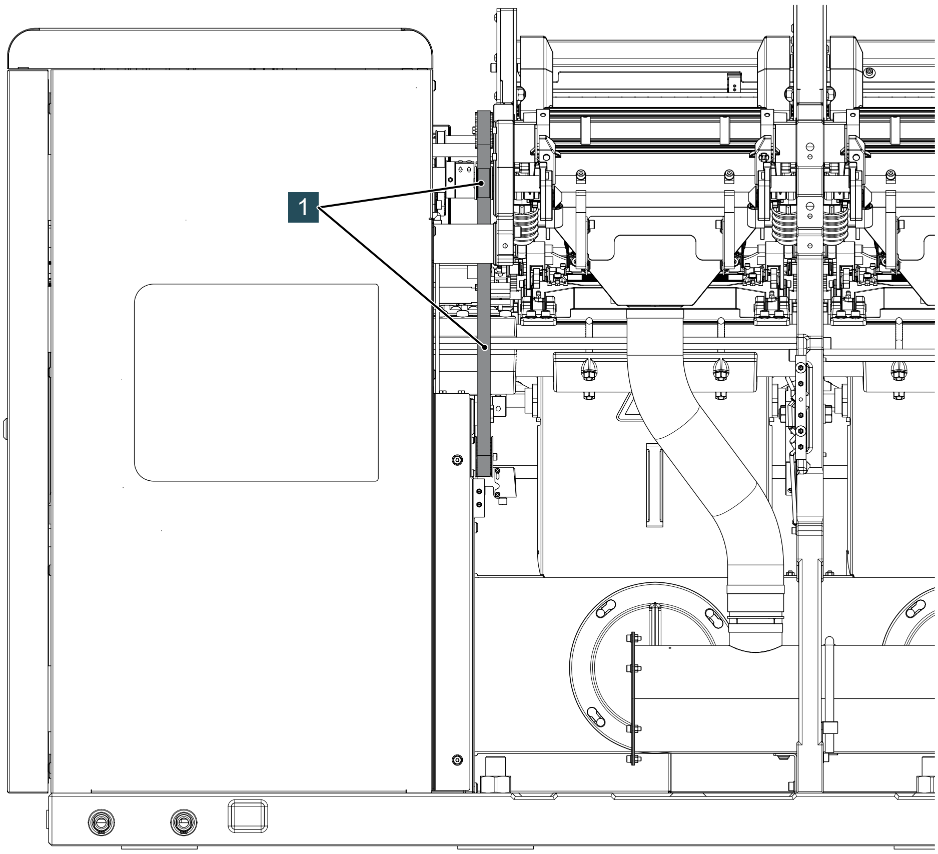


Figure 543: Lap roller

Result The belt drive of lap roller is cleaned.

9.10.26 Cleaning the Circular Comb

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ A circular-comb cleaner is to be used.

CAUTION

Sharp edges!

Risk of hand injuries because of the sharp edges

▶ Wear safety gloves.

1. Set the machine to Index 35.
2. **CAUTION! Sharp edges! Risk of hand injuries because of the sharp edges.** Clean the rear part of the circular comb 2 with the circular-comb cleaner 1.

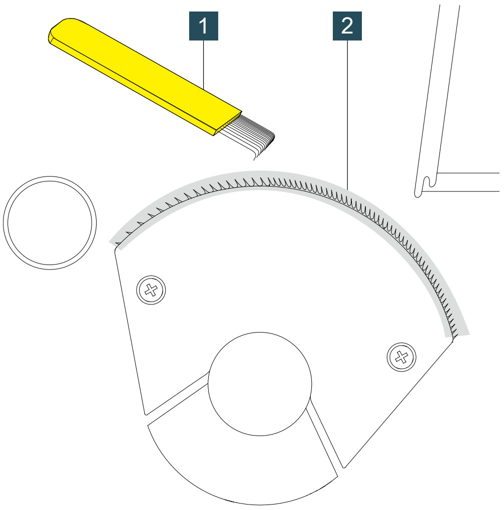


Figure 544: Circular comb

3. Set the machine to Index 3.
4. **CAUTION! Sharp edges! Risk of hand injuries because of the sharp edges.** Clean the front part of the circular comb 2 with the circular-comb cleaner 1.

Result The circular comb is cleaned.

9.10.27 Cleaning the Air Cooler

If the air cooler is in 1 of the conditions that follow, the air cooler is to be cleaned.

– 4 000 h since the last cleaning of the air cooler in the head stock.

- The inverter temperature is too high.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ A vacuum cleaner or roller picker is to be used.

1. Open the front door 2.

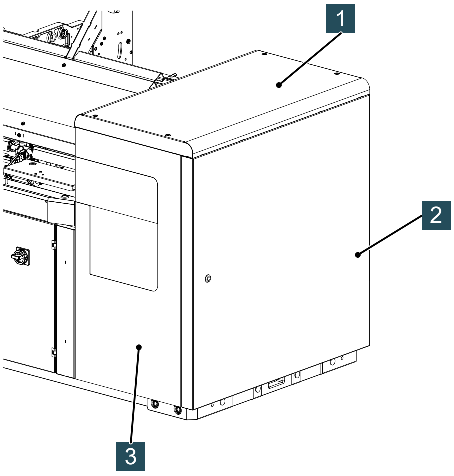


Figure 545: Head stock

2. Remove the top cover 1.
3. Loosen the screws 4.

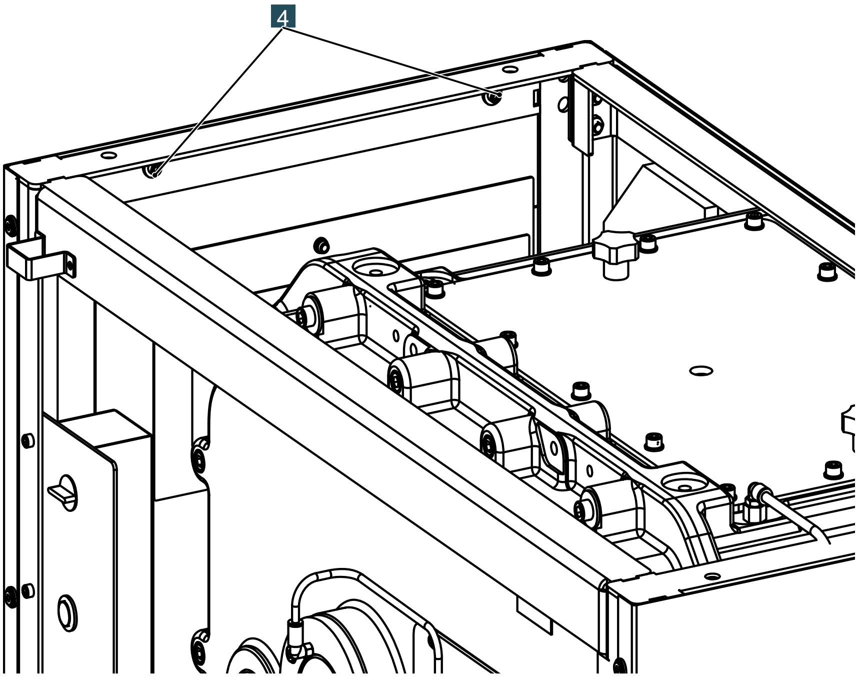


Figure 546: Screws for the side wall

4. Remove the front side wall 3.
5. Clean the air cooler 5 with the vacuum cleaner or a roller picker.

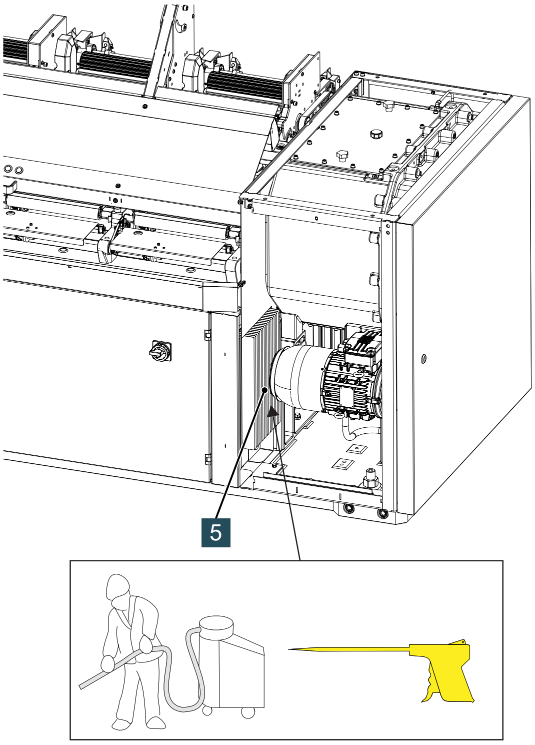


Figure 547: Air cooler at the headstock

6. Install the side wall 3.
7. Install the top cover 1.
8. Close the head stock door 2.

Result The air cooler is cleaned.

9.10.28 Cleaning the Motor Fan

The machine has the motors with fans that follow:

- Coiler motor
- Can changer motor
- Motor of the circular-comb brush
- Main motor at the head stock

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. If the motor fan is not possible to be cleaned on the machine, remove the screws 4.

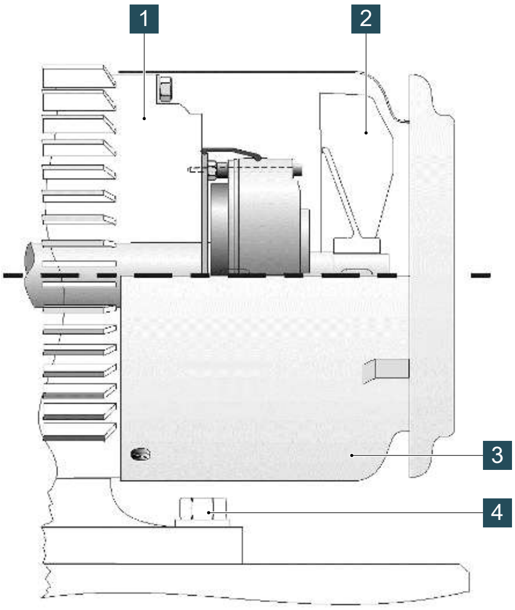


Figure 548: Motor fan

⇨ The motor 1 is removed from the machine.

2. Remove the fan hood 3.
3. Remove the fan wheel 2.
4. Clean the fan wheel 2 with a dry cleaning cloth.
5. Clean the fan hood 3 with a dry cleaning cloth.
6. Install the fan wheel 2.
7. Install the fan hood 3.
8. Install the motor 1.

Result The motor fan is cleaned.

9.11 Lubrication Tasks

This chapter contains information about the lubrication tasks of the machine.

⚠ **CAUTION**

Incorrect storage and incorrect operation of the lubricants

Irritation or burns to skin, eyes, or respiratory tract

Risk of slipping are spilled

- ▶ Read the safety data sheet.
- ▶ Use safety gloves and safety glasses.
- ▶ Do NOT touch hot lubricants.
- ▶ Clean up the lubricants that flow out.

9.11.1 Lubricating the Needle Roller Bearing of the Top Detaching Roller

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The semi-synthetic grease NLGI 2/1 (EP2) is to be used.
- ✓ A grease gun of a capacity of 0.333 cm^3 for each stroke is to be used.
- ✓ A lubrication pin of a diameter of 10 mm is to be used.

1. Open the cover.
2. Remove the top detaching roller 1.

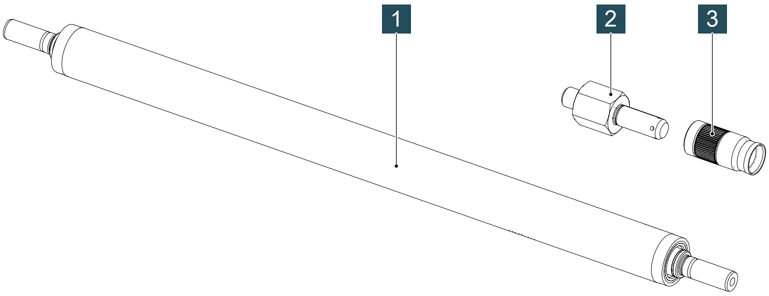


Figure 549: Top detaching roller

3. Remove the bearing 3.
4. Attach the lubrication pin 2 to the grease gun.
5. Apply 0.5 travels of lubricant to the bearing 3 with the grease gun.
6. Install the bearing 3 to the top detaching roller 1.
7. Remove the grease that comes out of the bearing with a cleaning cloth.
8. Install the top detaching roller 1.
9. Close the cover.

Result The needle roller bearing of the top detaching roller is lubricated.

9.11.2 Lubricating the Central Shafts on the Rear Side of the Comber

The lubrication points on the rear longitudinal shafts are as follows.

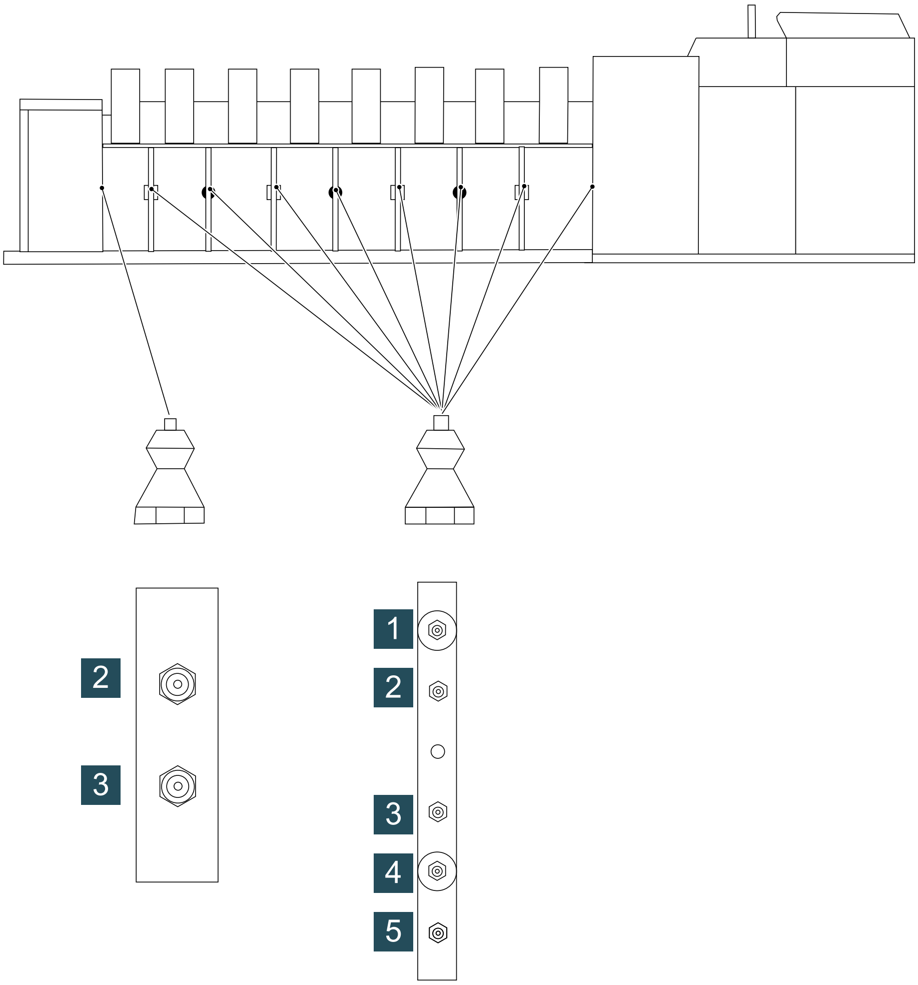


Figure 550: Lubrication points on the rear longitudinal shaft

1	Lubrication point of the circular-comb shaft	2	Lubrication point of the rear detaching roller
3	Lubrication point of the front detaching roller	4	Lubrication point of the nipper shaft
5	Lubrication point of the brush shaft		

Lubricating the Central Shafts

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The semi-synthetic grease NLGI 2/1 (EP2) is to be used.
- ✓ A grease gun of a capacity of 0.333 cm ^{3} for each stroke is to be used.

1. Open the rear door.

2. Apply 5 travels of the lubricant to the lubrication nipples 1 and 4 with the grease gun.
3. Apply 3 travels of the lubricant to the lubrication nipples 2, 3, and 5 with the grease gun.
4. Clean the lubricating nipples with a cleaning cloth.
5. Close the rear door.

Result The central shafts are lubricated.

9.11.3 Lubricating the Central Shafts on the Front Side of the Comber

The lubrication points on the front longitudinal shafts are as follows.

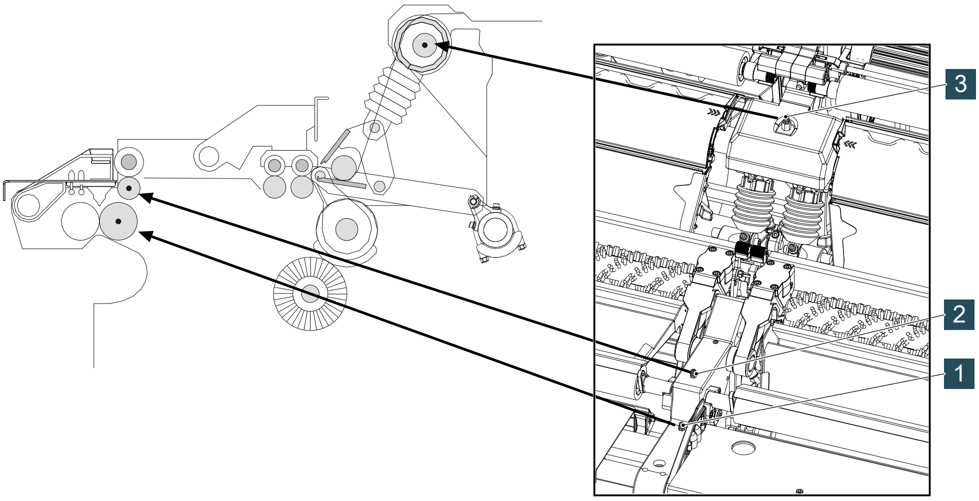


Figure 551: Lubrication points on the front longitudinal shafts

1	Lubrication point of the table calender roller	2	Lubrication point of the front delivery cylinder
3	Lubrication point of the eccentric shaft		

Lubricating the Central Shafts

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The semi-synthetic grease NLGI 2/1 (EP2) is to be used.
- ✓ A grease gun of a capacity of 0.333 cm^3 for each stroke is to be used.

1. Open the combing unit hood.
2. Apply the lubricant to the lubrication nipples 1, 2, and 3 with the grease gun until the grease comes out of the lubricating nipples.
3. Clean the lubricating nipples 1, 2, and 3 with a cleaning cloth.
4. Close the combing unit hood.

Result The central shafts on the front side of the comber are lubricated.

9.11.4 Lubricating the Nipper

Lubrication Points of the Nipper

The lubrication points of the nipper are as follows.

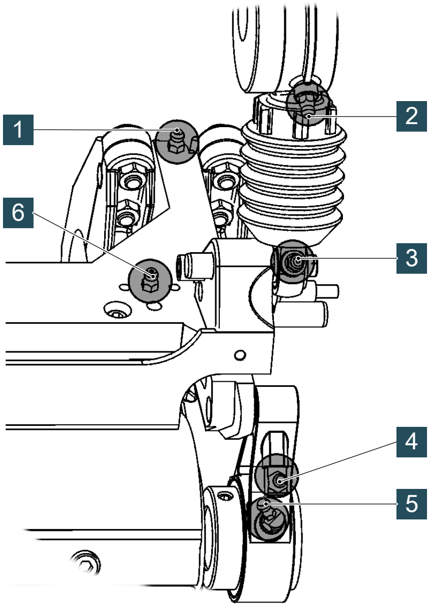


Figure 552: Lubrication points of the nipper

1	Lubrication point of the nipper crank	2	Lubrication point of the eccentric for the top nipper
3	Lubrication point of the spring assembly of the top nipper	4	Lubrication point of the top front support
5	Lubrication point of the bottom front support	6	Lubrication point of the top nipper

Lubricating the Lubrication Points of the Nipper

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The semi-synthetic grease NLGI 2/1 (EP2) is to be used.
- ✓ A grease gun of a capacity of 0.333 cm ^{3} for each stroke is to be used.

1. Open the hood.
2. Apply 3 travels of the lubricant to the lubrication points 1, 3, and 6 with the grease gun.
3. Set the machine to the Index 40.
4. Apply 3 travels of the lubricant to the lubrication points 2 and 5 with the grease gun.

5. Apply the lubricant to the lubrication point 4 until the lubricant comes out of the lubrication point.
6. Remove the grease that comes out of the bearing with a cleaning cloth.
7. Close the hood.

Result The nipper is lubricated.

9.11.4.1 Lubricating the Bushes of the Feed Roller

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The semi-synthetic grease NLGI 2/1 (EP2) is to be used.
- ✓ A grease gun is to be used.

1. Open the hood.
2. Remove the feed roller.
3. Remove the ratchet wheels.
4. Remove the bushes.
5. Clean the bushes of the journal pin with a cleaning cloth.
6. Clean the guide with a cleaning cloth.
7. Apply 1 travel of the lubricant to the bushes with a grease gun.
8. Clean the grease from the batt area.
9. Install the bushes.
10. Install the ratchet wheels.
11. Pull the batt into the nipper.
12. Install the feed roller.
13. Close the hood.

Result The bushes of the feed roller are lubricated.

9.11.5 Lubricating the Carrier Rollers (with ROBOlap)

The machine has 9 lubrication points for the top carrier rollers and 9 lubrication points for the bottom cylinders.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The semi-synthetic grease NLGI 2/1 (EP2) is to be used.
- ✓ The mineral gear oil ISO VG 150 (CC150) is to be used.
- ✓ A grease gun is to be used.

1. Remove the top carrier roller from the machine.
2. Remove the bushing 1 from the top carrier roller.

3. Apply a small quantity of the lubricant CC150 to the shaft of the top carrier roller with the grease gun.

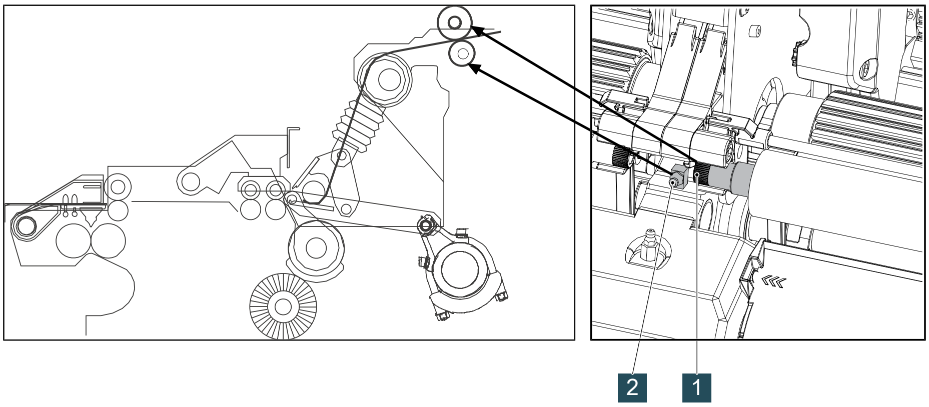


Figure 553: Lubrication points of the carrier roller

4. Install the bushing 1 to the top carrier roller.
5. Install the top carrier roller to the machine.
6. Apply the lubricant EP2 to the lubrication nipple 2 of the bottom carrier cylinder with the grease gun until the lubricant comes out of the lubrication nipple 2.

Result The carrier roller is lubricated.

9.11.6 Lubricating the Bushings of the Delivery Roller

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The Mineral gear oil ISO VG 150 (CC150) is to be used.
- ✓ A grease gun is to be used.

1. Open the hood.
2. Remove the delivery roller 1.

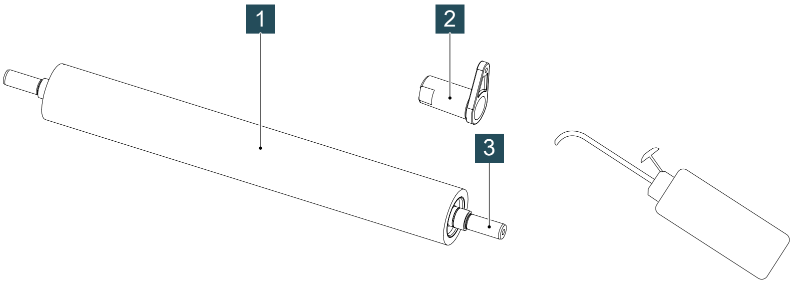


Figure 554: Journal pin

3. Remove the bushings 2.
4. Clean the shaft 3 with a cleaning cloth.
5. Apply a small quantity of the lubricant to the shaft 3 with the grease gun.

6. Install the bushings 2 to the delivery roller 1.
7. Install the delivery roller.
8. Close the hood.

Result The delivery roller bushings are lubricated.

9.11.7 Lubrication Points of the Delivery Unit

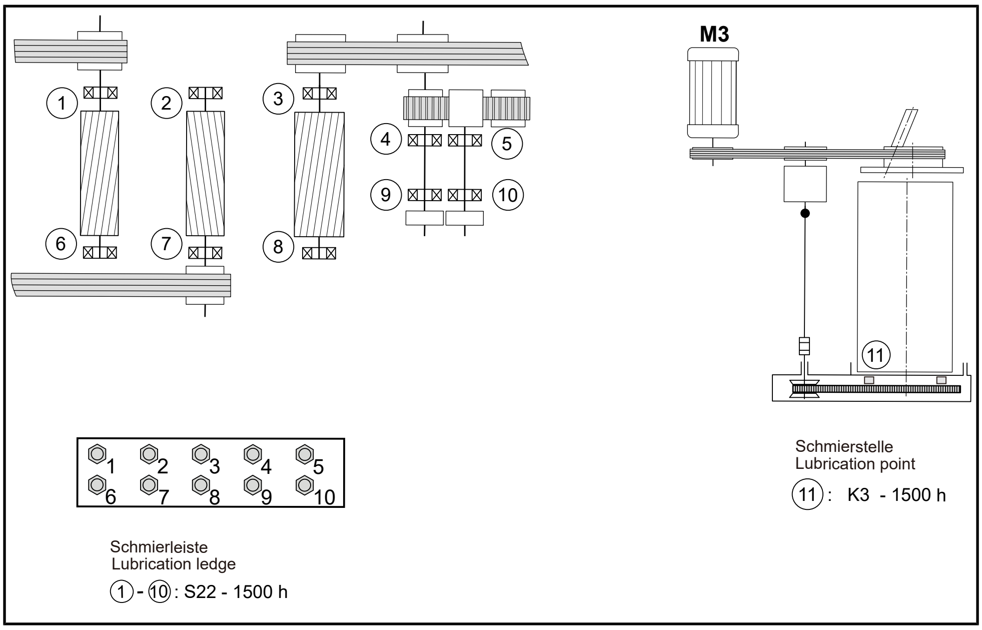

M3
1
2
3
4
5
9
10
6
7
8
11
1 2 3 4 5
6 7 8 9 10
Schmierstelle
Lubrication point
⑪: K3 - 1500 h
Schmierleiste
Lubrication ledge
① - ⑩: S22 - 1500 h

Figure 555: Lubrication points of the delivery unit

9.11.7.1 Lubricating the Lubrication Points 1 – 10

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The mineral grease NLGI 2/1(S22) is to be used.
- ✓ The grease gun is to be used.

1. Open all hoods.
2. Clean the lubrication points.
3. Make sure that all the lubrication hoses and lubricant distributors are in a good condition.
4. Apply the necessary quantity of lubricant to the lubrication points.
5. Clean the lubricating nipples.

Result The lubrication points 1 – 10 are lubricated.

9.11.7.2 Lubricate the Lubrication Point 11

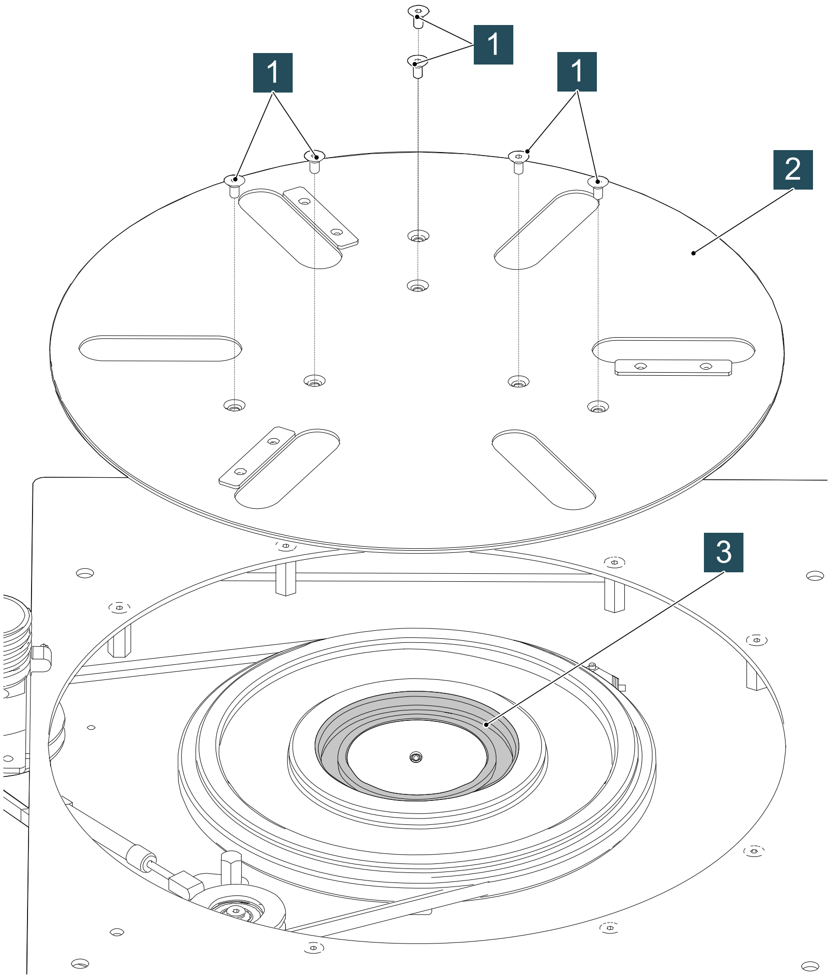


Figure 556: Bearing groove CD 600 mm

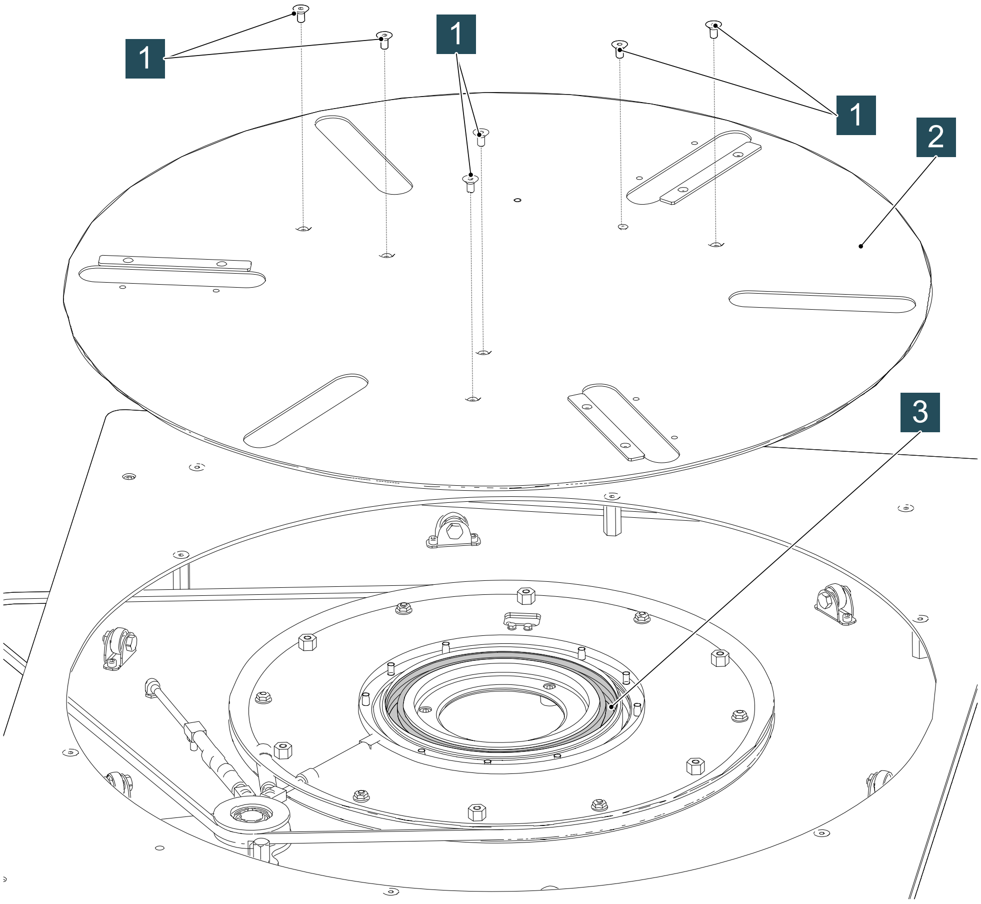


Figure 557: Bearing groove CD 1000/1200 mm

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The mineral grease NLGI 3 (K3) is to be used.

1. Remove the 6 screws 1 from the can plate 2.
2. Remove the can plate 2.
3. Apply the lubricant around the bearing groove 3.
4. Install the can plate with the 6 screws.

Result The lubrication point 11 is lubricated.

9.12 Inspection Tasks

This chapter contains information about the inspection tasks of the machine.

9.12.1 Doing a Check of the Clearer Lips of the Top Rollers

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Do a check if the edge of the clearer lips is straight.
2. Do a check if the clearer lips are elastic.
3. If a clearer lip is not in a good condition, replace the clearer lip (*refer to* ▶ *603*).

Result The check of the clearer lips of the top rollers is done.

9.12.2 Doing a Check of the Clearer Lips of the Drafting System Cylinders

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Do a check if the edge of the clearer lips is straight.
2. Do a check if the clearer lips are elastic.
3. If a clearer lip is not in a good condition, replace the clearer lip (*refer to* ▶ *604*).

Result The check of the clearer lips of the drafting system cylinders is done.

9.12.3 Doing a Check of the Belt Drive of the Lap Roller

1. Do a check of the belt for wear.
2. If the belt is worn, replace the belt (*refer to* ▶ *543*).
3. Open the sliding door 1.

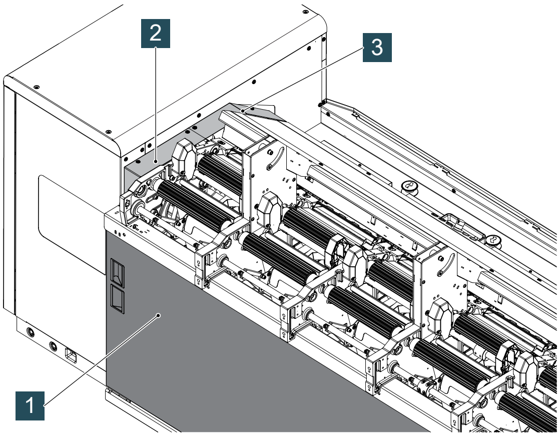


Figure 558: Covers of the belt drive

4. Remove the cover 2.
5. Remove the cover 3.
6. To do a check if the tension at the point of the belt 4 where the arrow points at the figure is between 70 and 80 Hz, use a belt tension meter.

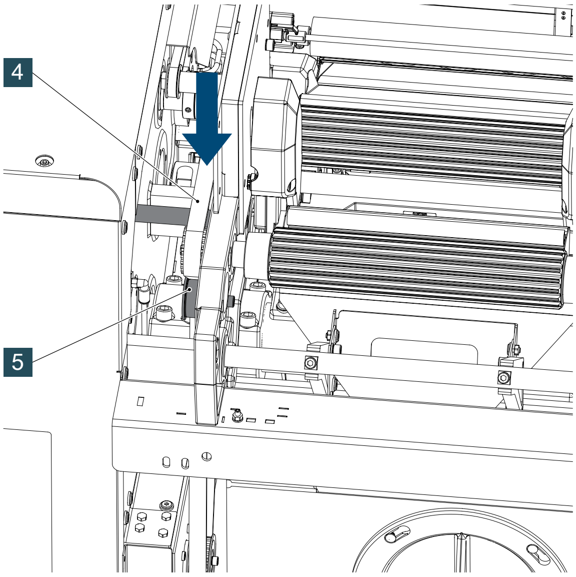


Figure 559: Belt drive

7. If no belt tension meter is available, do the steps 8 and 9.
8. When the belt 4 is loosened, make 2 lines on the belt 4 that are perpendicular to the belt edge and have a distance of 1 000 mm in between the lines.
9. Tighten the belt 4 until the distance between the 2 lines is between 1 007 mm and 1 009 mm.
10. If the belt tension is not between 70 and 80 Hz, correct the belt tension with the tension roller 5.

Result The check of the belt drive of the lap roller is done.

9.12.4 Doing a Check of the Belts Drive of the Carrier Roller

1. Do a check of the belt for wear
2. If the belt is worn, replace the belt (*refer to ▸ 545*).
3. Remove the cover 1.

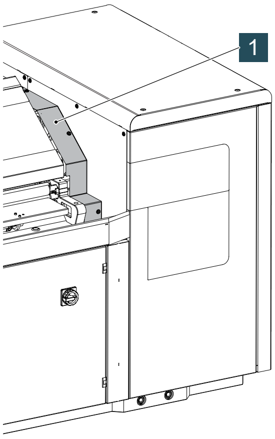


Figure 560: Cover on belt drive of the carrier roller

4. Do a check of the belt tension at the point of the belt 2 where the arrow points at the figure.
5. To do a check if the belt tension is between 85 and 95 Hz, use a belt tension meter.
6. If the belt tension meter is not available, do the steps 7 and 8.
7. When the belt is loosened, make 2 lines on the belt that are perpendicular to the belt edge and have a distance of 1 000 mm in between the lines.
8. Tighten the belt until the distance between the 2 lines is between 1 007 and 1 009 mm.
9. If the tension is not between 85 and 95 Hz, correct the tension.
10. Loosen the screw 3.

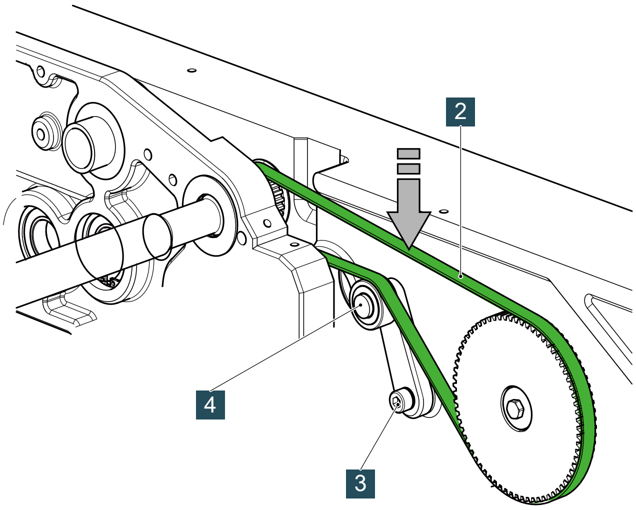


Figure 561: Belt drive of the carrier roller

11. Adjust the belt tension with the tension roller 4.

12. Tighten the screw 3.

Result The check of the belt drive of the carrier roller is done.

9.12.5 Doing a Check of the Tension of the Main-Drive Belt

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Open the door.
2. Do a check of the belt for wear.
3. If the belt is worn, replace the belt (*refer to* ▸ *547*).
4. Make sure that the tension of the belt 1 is between 115 and 125 Hz.

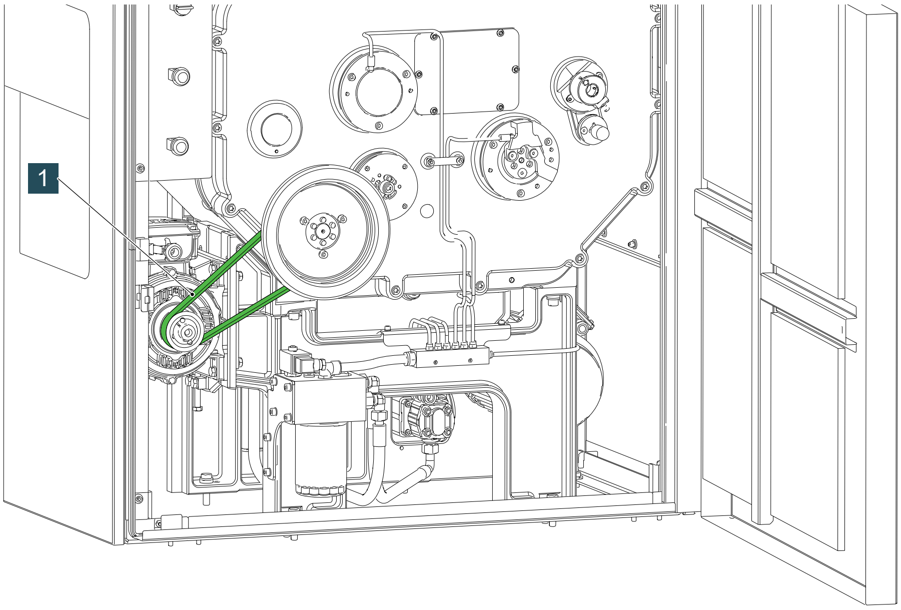


Figure 562: Main-drive belt

Result The check of the tension of the main-drive belt is done.

9.12.6 Doing a Check of the Top Roller Cots

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Do a check of the surface of the roller cots.
2. If the surface is damaged, do a check if the roller cots are worn.
3. Measure the outer diameter 1 of the roller with a caliper.

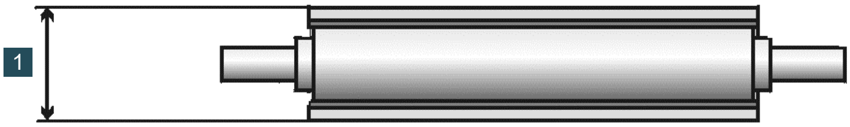


Figure 563: Outer diameter of the roller

4. If the outer diameter 1 is between the specified range, do the grinding of the roller cot (*refer to* ▸ *610*) (*refer to* ▸ *606*).
5. If the outer diameter 1 is not between the specified range, replace the roller cot.

Result The check of the top roller cots is done.

9.12.7 Doing a Check of the Oil Level in the Gearbox

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Open the front door.

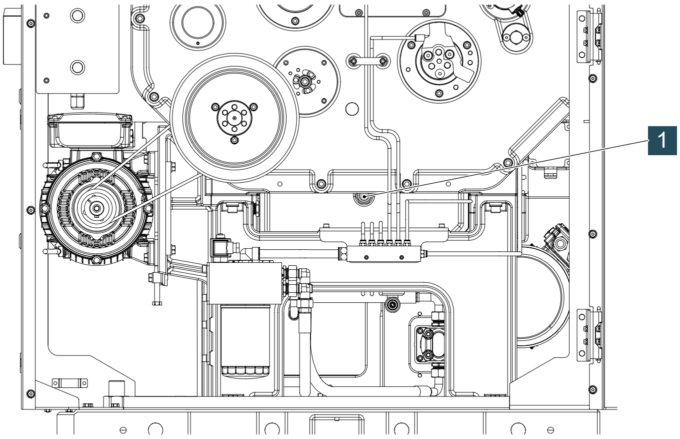


Figure 564: Inspection glass for the oil level

2. Do a check of the oil level in the gearbox through the inspection glass 1.
3. If the oil level is low, fill new oil S 14 into the gearbox from the lubrication point.

   ⇨ The oil is seen in the center of the inspection glass.
4. Close the front door.

Result The check of the oil level in the gearbox is done.

9.12.8 Doing a Check of the Detaching Roller Wiper

1. Do a check to see if the wiper 2 operates correctly.

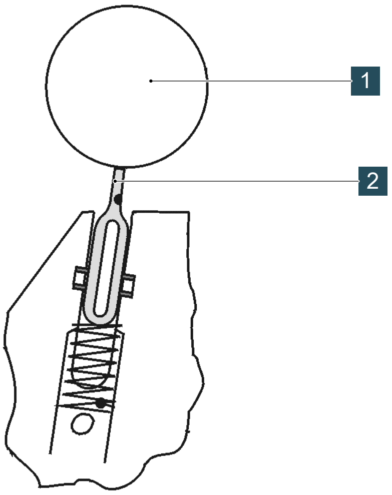


Figure 565: Wiper

2. To move the wiper 2 back to the initial position quickly, push down the wiper 2.
   - ⇨ If the springs push the wiper 2 into the guides to have the wiper tightly at the cylinder 1, the wiper 2 operates correctly.
   - ⇨ If the wiper 2 is not tightly at the cylinder 1, adjust the wiper 2 until the wiper 2 operates correctly.

Result The check of the detaching roller wiper is done.

9.12.9 Doing the Function Test of the Safety Relay

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position ON.

1. Do the remedy for the faults or the warning messages.
2. Make sure that the machine is ready for operation.

Result The function test of the safety relay is done.

9.12.10 Doing a Check of the Ball Bearings of the Top Rollers

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ 1 forcing screw of the bearing M6 is to be used.
- ✓ 1 fitting mandrel is to be used.
- ✓ 1 locking ring pliers is to be used.
- ✓ 1 hand lever press is to be used.
- ✓ 2 ball bearings 6000-C-2BRS are to be used.

⚠ CAUTION

Locking ring comes out of the plier suddenly!

Risk of an injury on the eyes

- ▶ Do always wear safety glasses when you remove the locking rings with the locking ring pliers.

1. Open the drafting system hood.
2. Remove the top rollers.
3. Remove the top roller bearings (*refer to ▸ 598*).
4. **CAUTION! Locking ring comes out of the plier suddenly! Risk of an injury on the eyes.** Remove the locking ring 5 with the locking ring pliers.

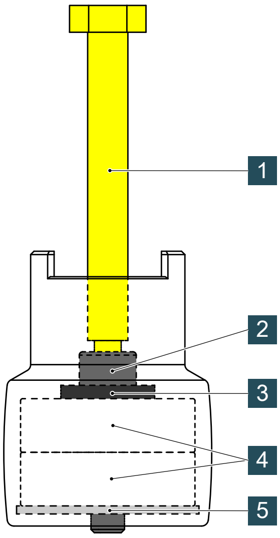


Figure 566: Ball bearings

5. Install the forcing screw 1 of the bearing M6 on the hexagon screw 2.
6. To push out the ball bearings 4 with the hexagon screw 2 and the counter disk 3, push the forcing screw 1 of the bearing M6.
7. Clean the ball bearings 4.
8. Do a check of the ball bearings 4 for damages.
9. Put the fitting mandrel 7 on a hand lever press.

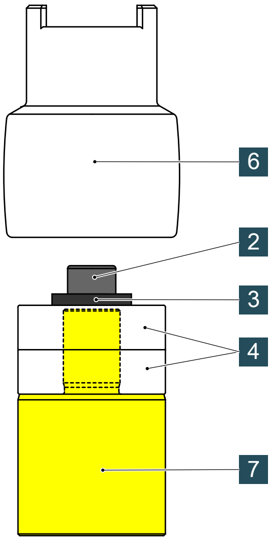


Figure 567: Ball bearings

10. Put 2 new ball bearings 4 onto the fitting mandrel 7.
11. Put the counter disk 3 with the flat side up and the hexagon screw 2 onto the ball bearings 4.
12. Push in the crown of the top roller bearing 6 with the hand lever press.
13. **CAUTION! Locking ring comes out of the plier suddenly! Risk of an injury on the eyes.** Install the locking ring 5 with the locking ring pliers.
14. Install the top roller bearings.
15. Install the top rollers (*refer to ▸ 598*).
16. Close the drafting system hood.

Result The check of the ball bearings of the top rollers is done.

9.12.11 Changing the Filter of the Filter Unit

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ A strap wrench is to be used.

1. Install the strap wrench 1 onto the filter 2.

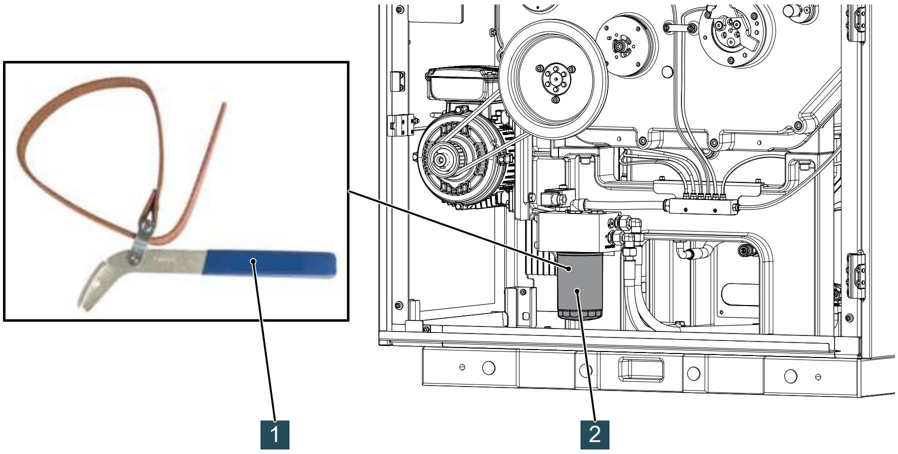


Figure 568: Filter of the filter unit

2. Turn the filter 2 to the left with the strap wrench 1.

   ⇨ The filter 2 is loosened.

3. Remove the strap wrench 1.
4. Turn the loosened filter 2 with the hand carefully.
5. Remove the filter 2 when the filter comes down.
6. Install a new filter onto the machine.
7. Install the strap wrench 1 onto the new filter.
8. Turn the new filter to the right with the strap wrench 1.

   ⇨ The filter is tightened.

9. Remove the strap wrench 1.

Result The filter of the filter unit is changed.

9.12.12 Changing the Oil of the Gearbox

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The synthetic oil ISO VG 150 (S14) with a quantity of 16 liters is to be used.
- ✓ An empty container is to be used.
- ✓ A funnel is to be used.
- ✓ An oil hose with a pipe coupling is to be used.

1. Open the head stock door.
2. Clean the pipe couplings 2 with a cloth.
3. Connect the oil hose 3 to the pipe coupling 1.

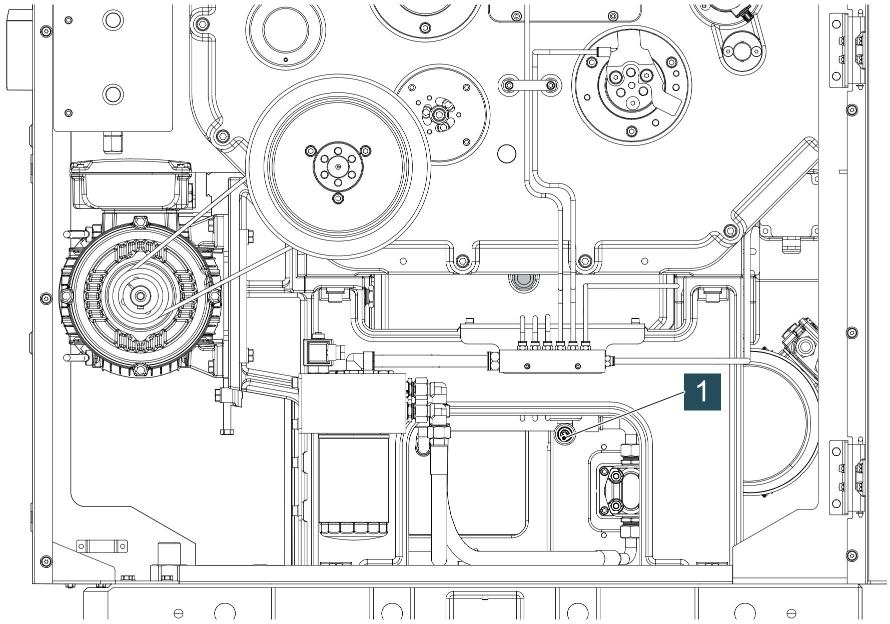


Figure 569: Oil draining coupling

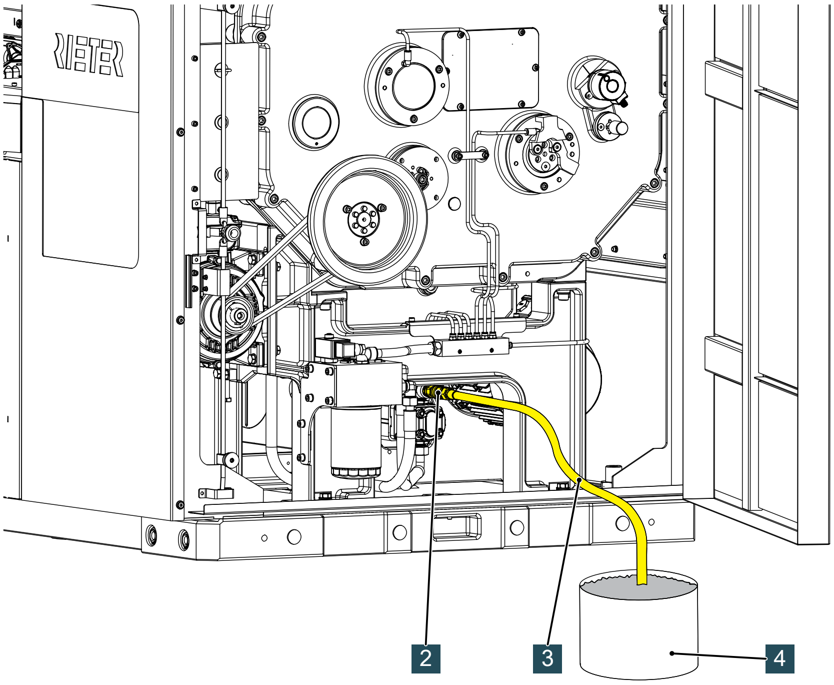


Figure 570: Oil draining

4. Drain the oil from the gearbox into the container 4.
5. Remove the oil hose 3.
6. Clean the pipe coupling 2.

7. Discard the oil correctly.
8. Remove the top cover.
9. Remove the inlet screw 5.

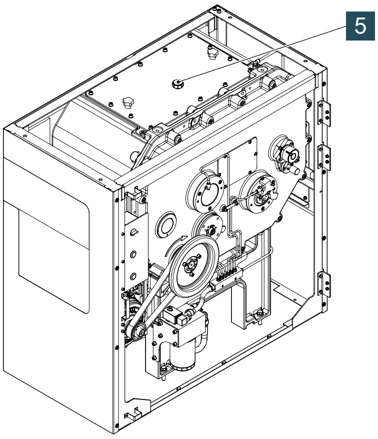


Figure 571: Oil inlet screw

10. Put the funnel 6 into the hole 7.

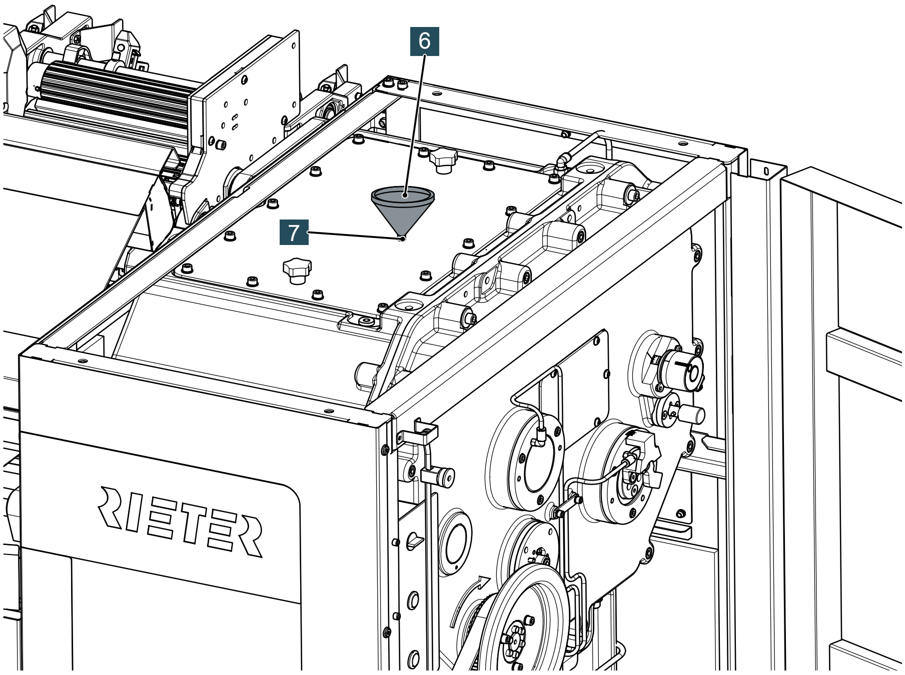


Figure 572: Oil filling

11. Fill 16 liters of oil S14 into the funnel 6.

   ⇨ The oil is seen in the center of the inspection glass.

12. Remove the funnel 6.

13. Put in the inlet screw 5.
14. Install the top cover.
15. Close the head stock door.

Result The oil of the gearbox is changed.

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10 Repair

This chapter contains information about the repair work of the machine.

More information about the electric devices and pneumatic devices is to be found in the electrical documentation.

10.1 Repair Personnel

Only Rieter-approved personnel are permitted to do the repair work at the machine.

10.2 Safety Regulations

The information that follows is the safety regulations that have to be obeyed:

- The machine is at a standstill.
- The main switch is set to the position OFF and the main switch is padlocked.

Risks The risks of injury to the personnel occur during the repair work because of:

- Human error
- Not using the personal protective equipment
- Not sufficient visual contact and communication with the personnel in the danger zone
- Electrical short-circuit

⚠ **DANGER**

The safety devices are removed or bypassed!

Death or dangerous injuries

▶ Do NOT remove the installed safety devices.
▶ Do NOT bypass the installed safety devices.

⚠ **WARNING**

Turning parts!

Risk of hand injury.

▶ Stay away from the machine until the machine is at a standstill.

10.3 Notice on the Machine Gearbox

The machine gearbox 1 is in the head stock.

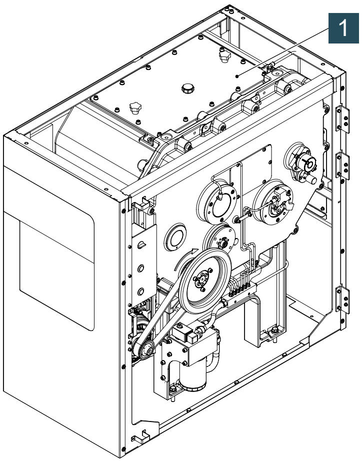


Figure 573: Cover of the gearbox

Only Rieter personnel or Rieter-approved personnel are permitted to adjust or change the settings in the gearbox. If 1 seal of the seals 2 at the gearbox is defective, Rieter does not accept any liability for damage to the gear unit.

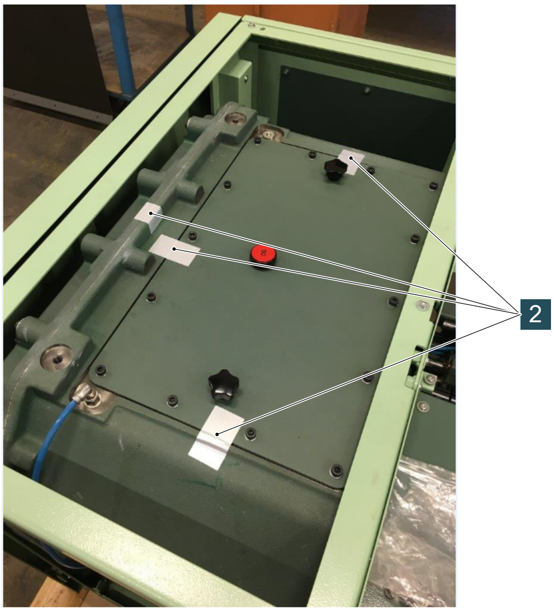


Figure 574: Seals at the gearbox

NOTICE

Modification or setting in the gear box!

Damage to the gear unit

▶ Do not modify anything or change settings in the gear box.

10.4 Repair Work

This chapter contains information about how to repair the defective machine parts.

10.4.1 Machine Paint

The user can repair the machine paint with the paint sprays as follows:

Paint Spray Color	NSC Code
Light grey	NCS S 3500-N
Light green	NCS S 2020-G10Y
Dark green	NCS S 2020-G10Y

10.4.2 Lap Roller and Carrier Roller

This section contains the information about how to repair the lap rollers and the carrier rollers.

10.4.2.1 Replacing the Timing Belt of the Lap Roller

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Timing Belt of the Lap Roller

1. Open the sliding door 1.
2. Remove the cover 2.
3. Remove the cover 3.

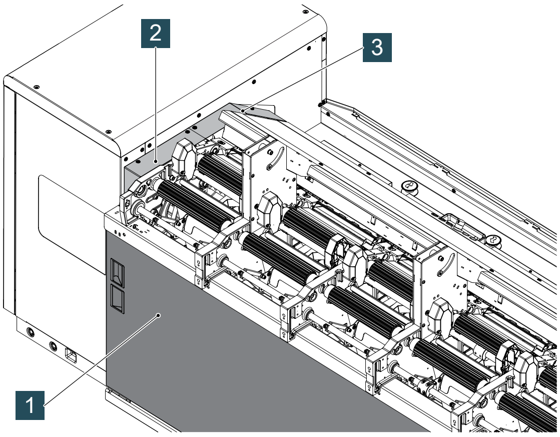


Figure 575: Covers of the belt drive

4. Loosen the screw 4.

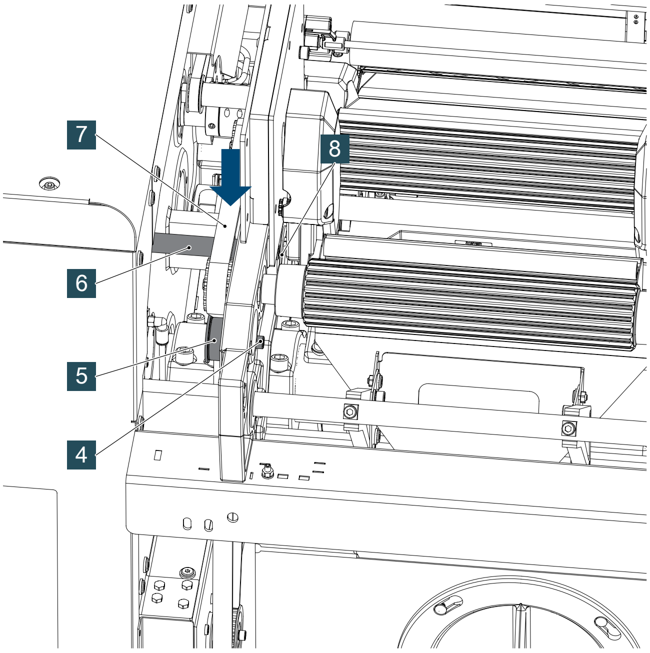


Figure 576: Belt drive

5. Move the tension roller 5.

   ⇨ The tension is released from the timing belt.

6. Remove the screw 8.
7. Remove the sleeve 6.
8. Remove the timing belt 7.

   ⇨ The timing belt of the lap roller is removed.

Installing the Timing Belt of the Lap Roller

1. Install the timing belt 7.
2. Install the sleeve 6.
3. Tighten the screw 8.
4. Apply tension to the timing belt with the tension roller 5 and tighten the screw 4.

   ⇨ The timing belt 7 is tightened.

5. Do a check of the tension of the timing belt 7 at the point that the arrow points.
6. Make sure that the tension is between 70 and 80 Hz.
7. If the tension is not between 70 and 80 Hz, correct the tension.
8. Install the covers 2 and 3.
9. Close the sliding door 1.

⇨ The timing belt of the lap roller is installed.

Result The timing belt of the lap roller is replaced.

10.4.2.2 Replacing the Timing Belt of the Carrier Roller

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Timing Belt of the Carrier Roller

1. Remove the cover 1.

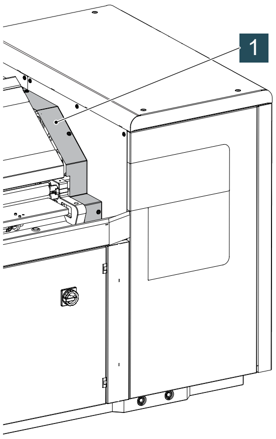


Figure 577: Cover of the belt drive of the carrier roller

2. Loosen the screw 3.

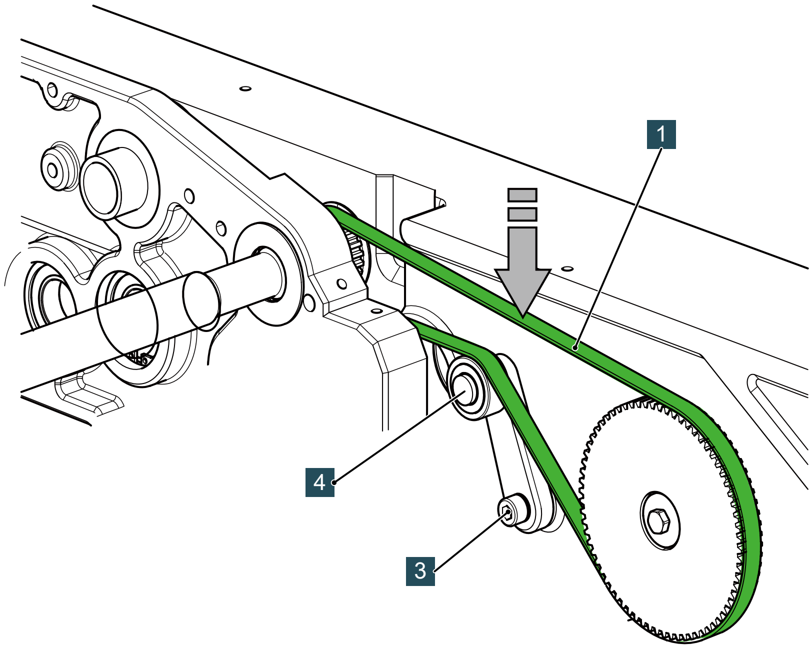


Figure 578: Belt drive of the carrier roller

3. Move the tension roller 4.

   ⇨ The timing belt 2 is loosened.

4. Remove the timing belt 2.

   ⇨ The timing belt of the carrier roller is removed.

Installing the Timing Belt of the Carrier Roller

1. Install the timing belt 2.
2. Apply tension to the timing belt with the tension roller 4 and tighten the screw 3.

   ⇨ The timing belt 2 is tightened.

3. Do a check of the tension of the timing belt 2 at the point that the arrow points in the figure.
4. Make sure that the tension is between 85 and 95 Hz.
5. If the tension is not between 85 and 95 Hz, correct the tension.
6. Install the cover 1.

   ⇨ The timing belt of the carrier roller is installed.

Result The timing belt of the carrier roller is replaced.

10.4.2.3 Replacing the Main-Drive Belt

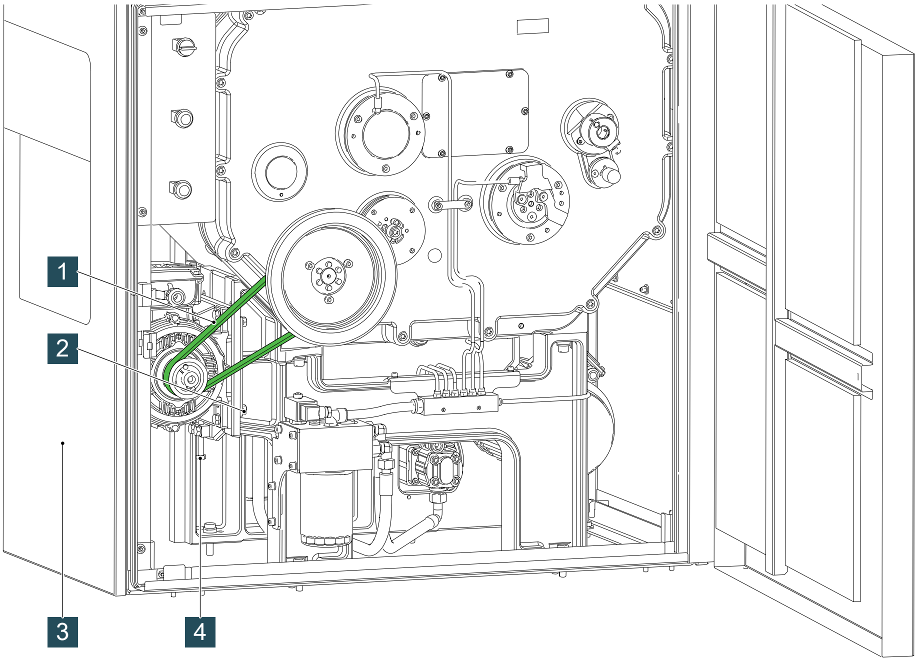


Figure 579: Main-drive belt

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Main-Drive Belt

1. Open the door.
2. Remove the cover 3.
3. Loosen the 4 screws 2.
4. Lift the motor with the tensioner 4.

   ⇨ The tension is released from the belt.
5. Remove the belt 1.

   ⇨ The main-drive belt 1 is removed.

Installing the Main-Drive Belt

1. Install the main-drive belt 1.
2. Loosen the tensioner 4 until the motor applies a tension between 115 and 125 Hz to the belt.
3. Tighten the 4 screws 2.
4. Make sure that the tension of the belt is between 115 and 125 Hz.
5. If the tension is not between 115 and 125 Hz, correct the tension.
6. Install the cover 3.

7. Close the door.

   ⇨ The main-drive belt 1 is installed.

Result The main-drive belt is replaced.

10.4.3 Circular Comb

This section contains the information about the repair work of the circular comb.

10.4.3.1 Replacing the Circular-Comb Shafts

To replace the sealing ring 1, the bushing 2, the front support 3, the sealing ring 4, and the bearings 5, the circular-comb shaft is to be pushed to the position where the parts are possible to be removed.

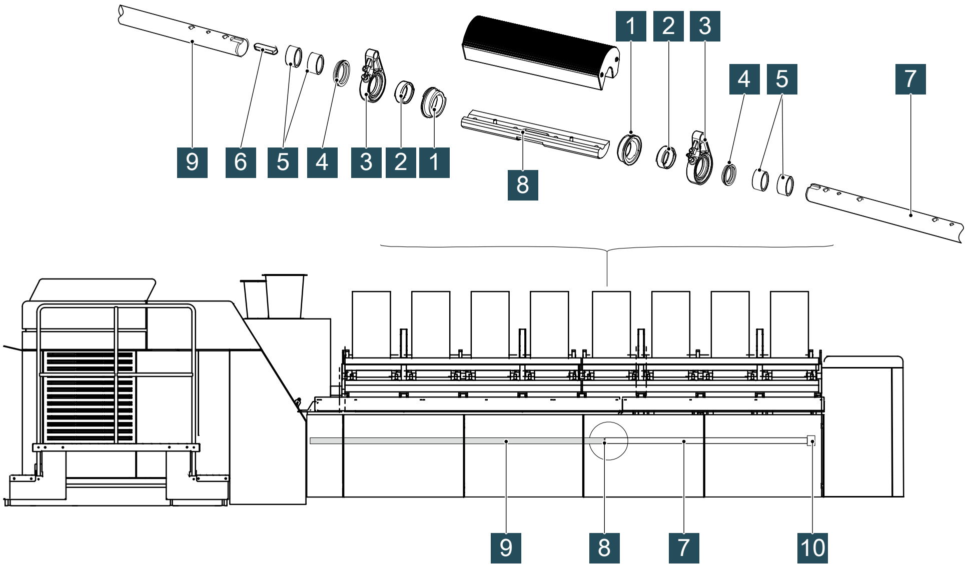


Figure 580: Circular-comb shafts

If only the shaft 9 is to be removed, the screws at the coupling 10 are not to be loosened. If the shaft 7 is to be removed, the screws at the coupling 10 are to be loosened.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ All circular combs are removed (*refer to ▸ 553*).
- ✓ The raw materials are removed from the machine.

Removing the Circular-Comb Shafts

1. Remove the screws 13 at the 4th combing unit.

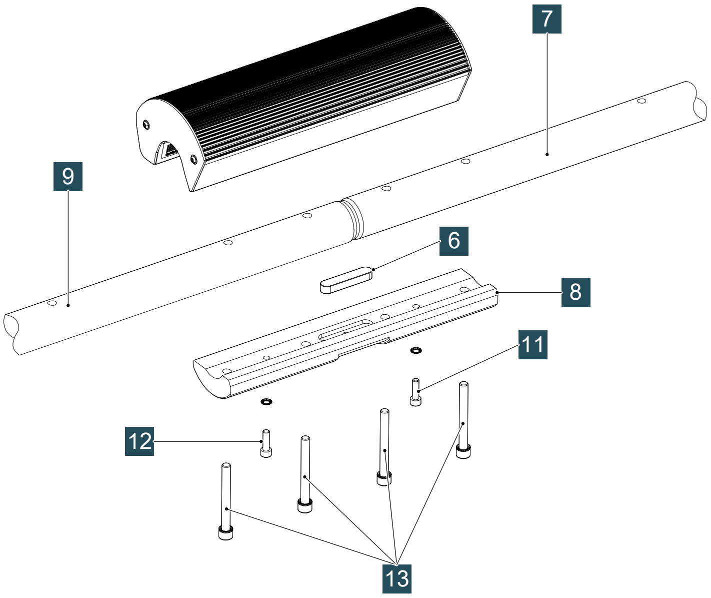


Figure 581: Circular comb

2. Remove the screw 12 at the 4th combing unit.
3. Loosen the screw 11.
4. Hold the counterweight 8.
5. Remove the screw 11.
6. Remove the counterweight 8.
7. Remove the feather key 6.
8. Select the shaft that is to be removed.
9. If the shaft 7 is to be removed, loosen the screws at the coupling 10.
10. Disassemble the front support 3 of the related nipper (*refer to* ▸ *577*).

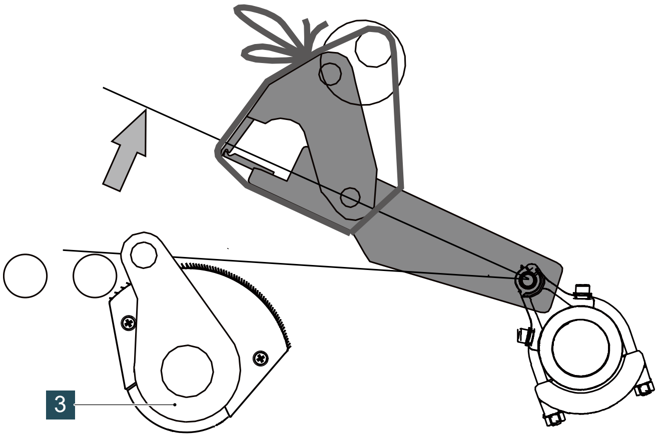


Figure 582: Front support of the nipper

11. Hold the nipper at the top with a string.
12. Set the machine to Index 40.
    ⇨ The personnel have access to the circular-comb shaft.
13. Remove the sealing rings 1 at the 2 ends of the circular combs.

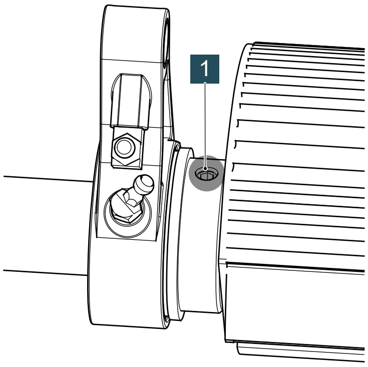


Figure 583: Sealing rings

14. Remove the plastic plug from the end frame.
15. Remove the external locking ring.
16. Remove the covers from the delivery unit.
17. Extend the circular-comb shaft.
18. Pull out the long circular-comb shaft 9.
19. If necessary, pull out the short circular-comb shaft 7.
20. Remove the parts when the parts are disengaged from the circular-comb shaft.
21. Put the parts in the correct sequence on a table.
    ⇨ The circular-comb shafts are removed.

Installing the Circular-Comb Shaft

1. Clean all parts that are to be installed on the circular-comb shaft.
2. Put all parts in the correct sequence on a table.
3. Clean the circular-comb shaft.
4. Lubricate the circular-comb shaft.
5. Install the bearings 5 and the sealing ring 4 at the intermediate frames (*refer to* ▸ *552*).
6. If the short circular-comb shaft 7 was removed, install the short circular-comb shaft 7. (The short circular-comb shaft has feather key grooves of different lengths. The feather key groove that is shorter is at the head stock.)

7. Install the long circular-comb shaft 9. (The long circular-comb shaft has a bearing journal on 1 end. The shaft end with the bearing journal is to be put at the end frame.)
8. While the circular-comb shaft becomes installed, install all removed parts in the correct sequence.
9. Connect the long circular-comb shaft and the short circular-comb shaft with the feather key 6.
10. Make sure that the circular-comb shafts are installed axially.
11. Make sure that the circular-comb shaft couplings are installed in the correct position.
12. Push the sealing ring 1 into the front support 3.

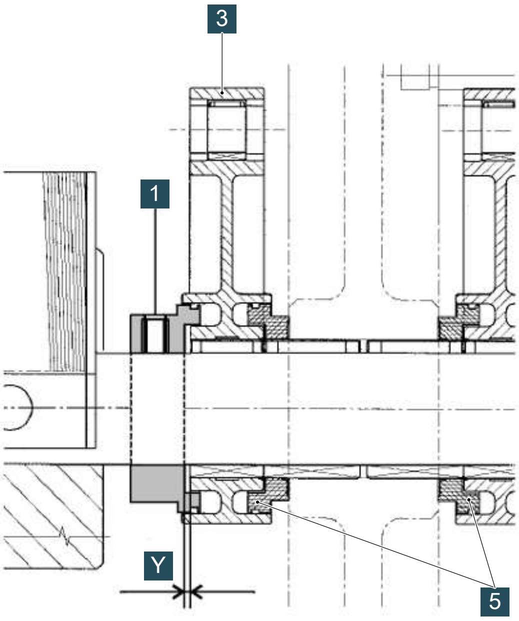


Figure 584: Distance between the sealing ring and the front support

13. To set the distance Y between the sealing ring 1 and the front support 3 to between 0.2 and 0.4 mm, pull the sealing ring 1.
14. Tighten the clamping screws at the sealing rings 1.
15. Put the counterweight 8 at the 4th combing unit.
16. Install and tighten the screws 11 and 12 with a tightening torque of16 Nm.
17. Install and tighten the screws 13 with a tightening torque of 25 Nm.
18. Install the circular combs (*refer to ▸ 553*).

   ⇨ The circular-comb shafts are installed.

19. Install the covers of the delivery unit.

Result The circular-comb shafts are replaced.

10.4.3.2 Installing the Needle Roller Bearing

Prerequisites Make sure that the criteria are obeyed:

- ✓ An applicable punch is to be used.

1. Hit the needle roller bearing with the punch.
2. Keep the distance X between 6.5 and 6.8 mm.

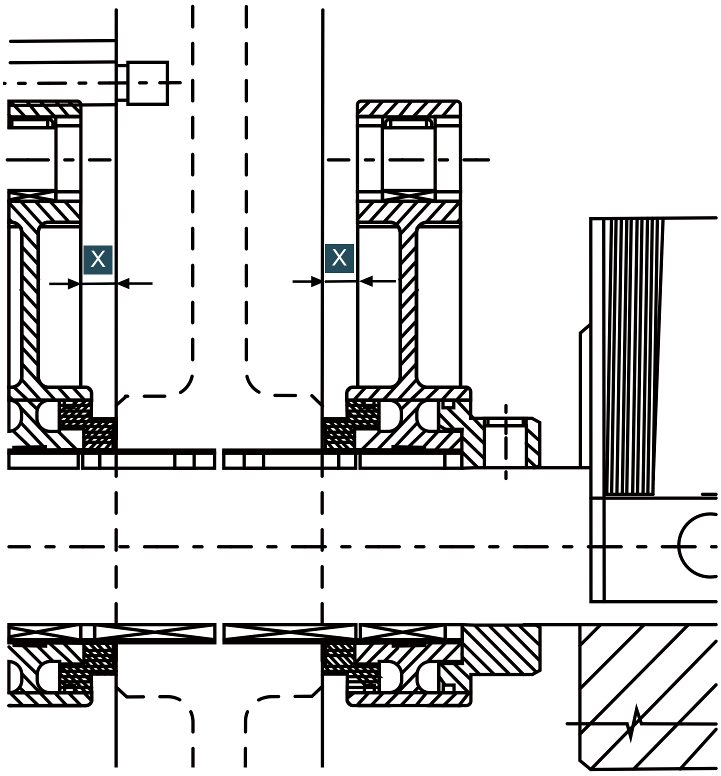


Figure 585: Distance X

3. Install the sealing rings at the intermediate frames.

Result The needle roller bearing is installed.

10.4.3.3 Doing a Check of the Mechanical Resistance

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Remove all materials from the machine.
2. Remove all tools from the machine.
3. Remove the V-belts from the main drive.
4. Open the top detaching roller.
5. Open the drafting system.
6. Turn the top pulley in the direction of the arrow.

7. Feel the compression of the nipper spring assembly.
8. If the index disk is hard to be turned a full revolution, disconnect the individual drive units.
9. To find the cause of the resistance, turn a part of the mechanical system.
10. If the specified bearings are not lubricated sufficiently, lubricate the related bearings.
11. Do a check with a flashlight when the lubricant is applied to the related lubrication point.

Result The check of the mechanical resistance is done.

10.4.3.4 Doing a Check of the Circular Comb Condition

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Clean the circular comb.
2. Do a check of the circular-comb wire with a magnifying glass.
3. If the circular-comb wire is damaged and not sharp, replace the circular comb.

Result The check of the circular comb condition is done.

10.4.3.5 Replacing the Circular Comb

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

CAUTION

The sharp edges!

Injury because of sharp edges

▶ Wear the safety gloves when touching top comb.

Removing the Circular Comb

1. Remove the cotton.
2. Clean the nipper knife.
3. Set the detaching distance to 16.5.
4. Set the machine to Index 21.5.
5. Loosen the screws 1, 2, 3, and 4.

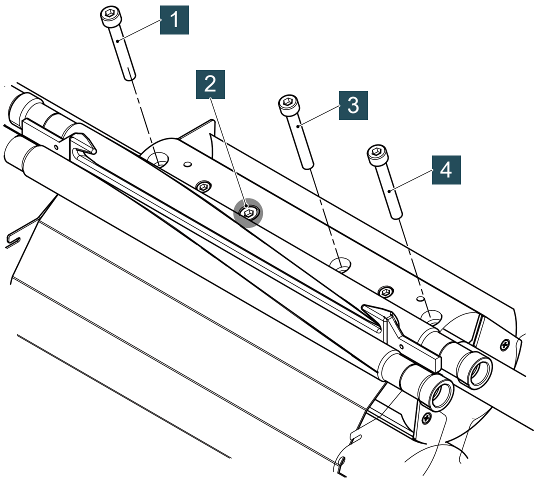


Figure 586: Screws at the circular comb

6. Remove the screws 1, 3, and 4
   - ⇨ The circular comb stays in position.
7. Remove the cover ffrom the suction duct.
8. **CAUTION! The sharp edges! Injury because of sharp edges.** Hold the circular comb 5.
9. Remove the screw 2 at the front.
10. Pull out the circular comb 5 to the rear.

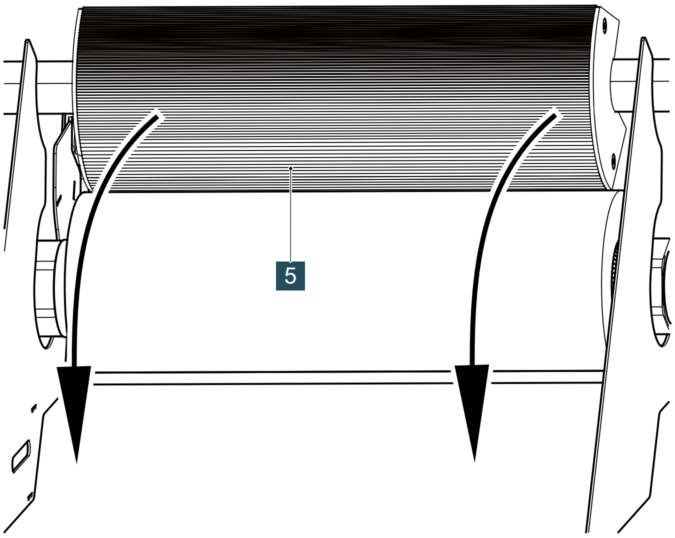


Figure 587: Circular comb

⇨ The circular comb is removed.

Installing the Circular Comb

1. Record the number of the combing positions 1 – 8 at the front 8 of each circular comb.
2. Make sure that the number 6 and the number 7 are the same.

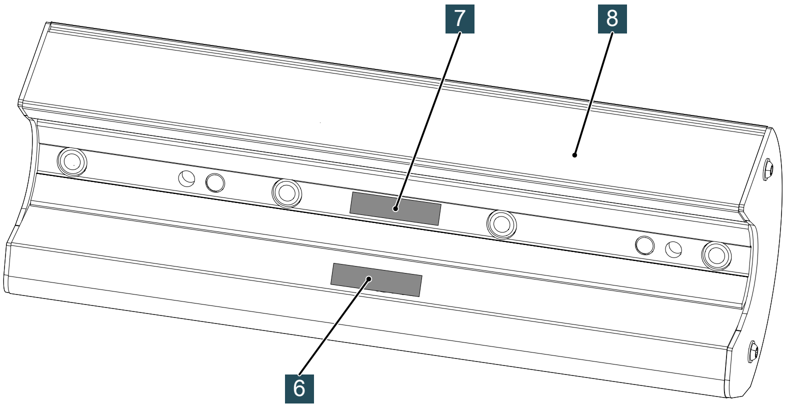


Figure 588: Circular comb

3. Remove the cover from the suction duct.
4. **CAUTION! The sharp edges! Injury because of sharp edges.** Install the circular comb carefully.
5. Install the screw 2 at the front.
6. Install the screws 1, 3, and 4.
7. Tighten all 4 screws with a tightening torque of 25 Nm.

   ⇨ The circular comb is installed.

Result The circular comb is replaced.

10.4.3.6 Adjusting the Position of the Circular Comb

Prerequisites Make sure that the criteria are obeyed:

✓ A feeler gauge is to be used.

1. Set the detaching distance to 7.
2. Set the machine to Index 3.
3. To measure the distance C between the rear row of teeth and the nipper, use the feeler gauge.

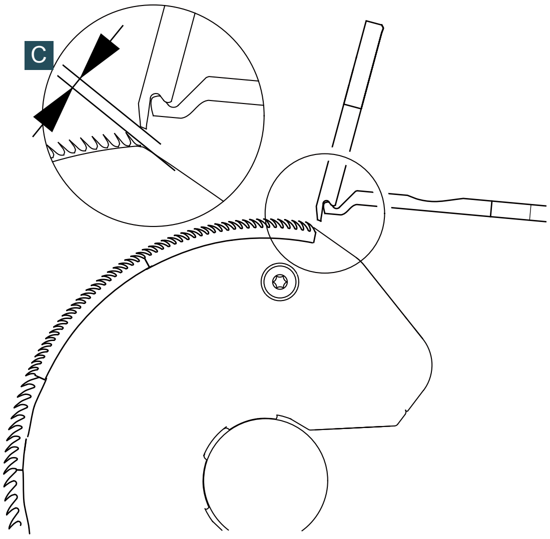


Figure 589: Circular comb position

4. Measure the distance C at all combing units.
5. Calculate the difference.
6. If the difference is > 0.4 mm, loosen the circular comb and correct the position.

Result The position of the circular comb is adjusted.

10.4.4 Circular Comb Brush

This section contains the information about the repair work of the circular comb brush.

10.4.4.1 Adjusting the Circumferential Speed of the Circular-Comb Brush

The brush diameter has the effects on the circumferential speed of the brush and its degree of contact with the circular comb.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The rear sliding door is opened.
- ✓ The fly duct cover is removed.

1. Measure the diameter A with the textile tape.

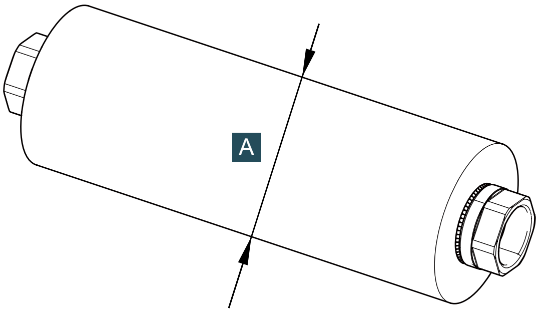


Figure 590: Diameter of the circular-comb brush

2. Enter the diameter in the data screen 1.5.1.1 **Brush**.

If the diameter is ≥ 95 mm

1. Decrease the brush speed in the data screen 1.5.1.1 **Brush**.
2. Set the brush meshing depth (*refer to* ▸ *557*).

If the diameter is between 85 and 95 mm

1. Increase the brush speed in the data screen 1.5.1.1 **Brush**.
2. Set the brush meshing depth (*refer to* ▸ *557*).

If the diameter is ≤ 85 mm

1. Replace the circular-comb brush (*refer to* ▸ *561*).
2. Decrease the brush speed in the data screen 1.5.1.1 **Brush**.
3. Set the brush meshing depth (*refer to* ▸ *557*).

Result The circumferential speed of the circular brush is adjusted.

10.4.4.2 Setting the Brush Meshing Depth

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The rear sliding door is opened.
- ✓ The fly duct cover is removed.
- ✓ The machine is set to Index 38 (*refer to* ▸ *290*).
- ✓ The Ri-Q-Comb brush gauge (23.5 mm thick) is to be used.
- ✓ A hexagonal key is to be used.

1. Put the Ri-Q-Comb brush gauge 3 at the measuring point 1 between the counterweight 2 and brush 4.

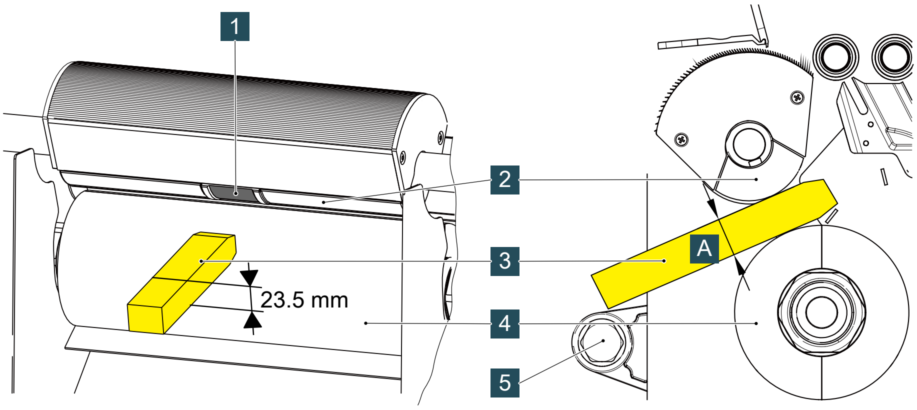


Figure 591: Setting gauge between the counterweight and the brush

⇨ If the Ri-Q-Comb brush gauge can be inserted into the position and have slight contact with the surface of counterweight 2 and brush 4, the distance is correct.

2. If the Ri-Q-Comb brush gauge cannot be inserted to position, or the distance A is too large for the Ri-Q-Comb brush gauge, do the steps from 4 to 9.
3. Open the sliding door of section 1.
4. Remove the cover 6.

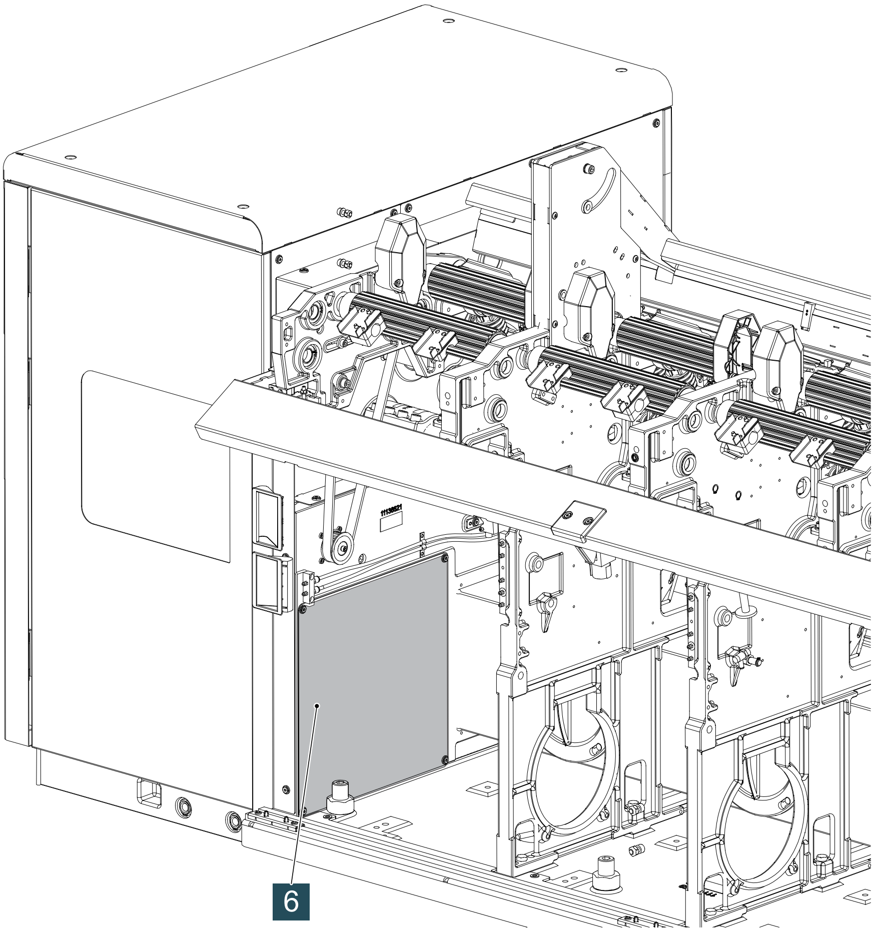


Figure 592: Cover of the brush motor pulleys

5. Loosen the screw 7.

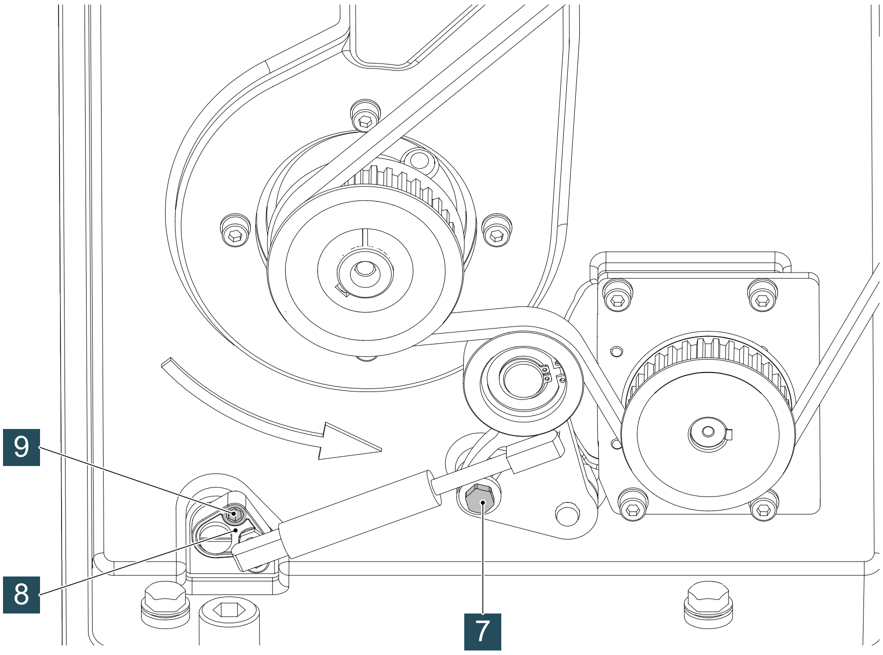


Figure 593: Brush motor tensioner

6. Put the hexagonal key into the hexagonal hole 9 of the eccentric 8.
7. Turn the hexagonal key counterclockwise.
   ⇨ The belt tensioner of the brush motor is loosened.
8. Loosen all 9 screws 5. (1 of the screws 5 is at the head stock.)

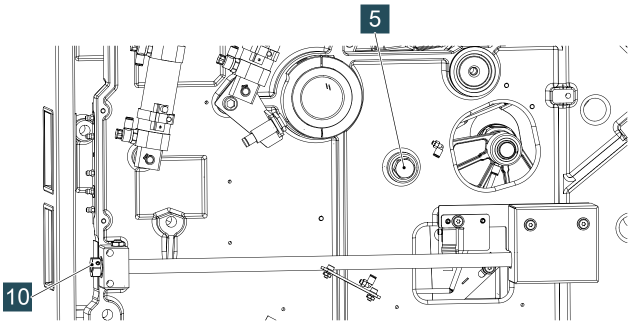


Figure 594: Brush drive

9. To set the distance A to 23.5 mm, turn the nut 10 of the central adjustment mechanism.
10. Tighten the 9 screws 5.
11. Turn the eccentric 8 clockwise to the end stop with the hexagonal key.
12. Tighten the screw 7.
    ⇨ The belt tensioner of the brush motor is tightened.

13. Install the cover 6.
14. Set the machine to Index 20.
15. Make sure that the brush 4 touches the circular comb lightly.

Result The brush meshing depth is set.

10.4.4.3 Replacing the Brush

If the brush is to be replaced, the user must replace the 8 brushes.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The rear sliding door is opened.
- ✓ The fly duct cover is removed.
- ✓ The machine is set to Index 38.

1. Loosen the nuts 1 (the nut on the right side has a right-hand thread, the nut on the left side has a left-hand thread.).

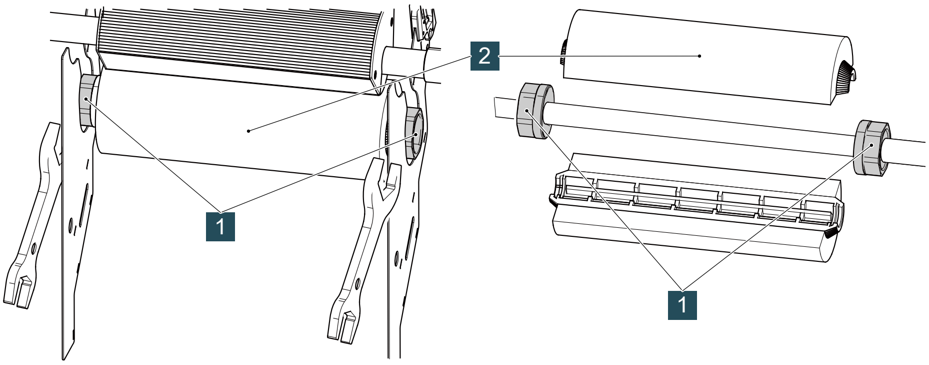


Figure 595: Brush halves

⇨ The 2 brush halves 2 are possible to be removed.

2. Lower the brushes with the central adjustment mechanism.
3. Install the brush halves 2.
4. Tighten the nuts 1.
5. Set the distances A and B that are between the nut 1 and the brush 2 to the same value.

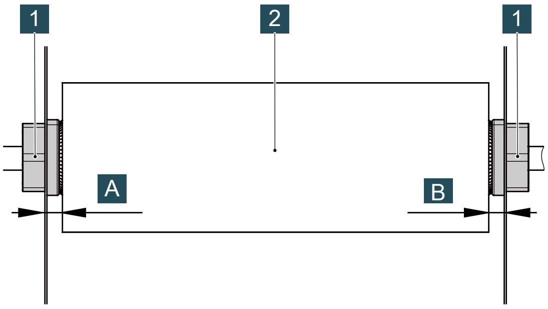


Figure 596: Distances between the nut and the brush

6. Set the meshing depth of the circular-comb brush (*refer to ▸ 557*).
7. Set the brush diameter in the data screen 1.5.1.1 **Brush** in accordance with the brush diameter.

Result A brush is replaced.

10.4.4.4 Replacing the Timing Belt of the Brush Motor

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Timing Belt of the Brush Motor

1. Open the left sliding door of the longitudinal section.
2. Remove the cover 1.

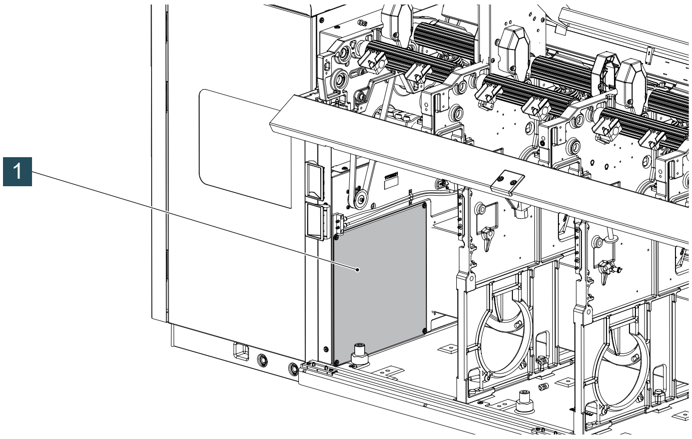


Figure 597: Cover of the brush motor pulleys

3. Loosen the screw 2.
4. Put the hexagonal key into the hexagonal hole 4 of the eccentric 3.
5. Turn the hexagonal key counterclockwise.

   ⇨ The belt tensioner of the brush motor is loosened.
6. Remove the timing belt 5.

⇨ The timing belt 5 of the brush motor is removed.

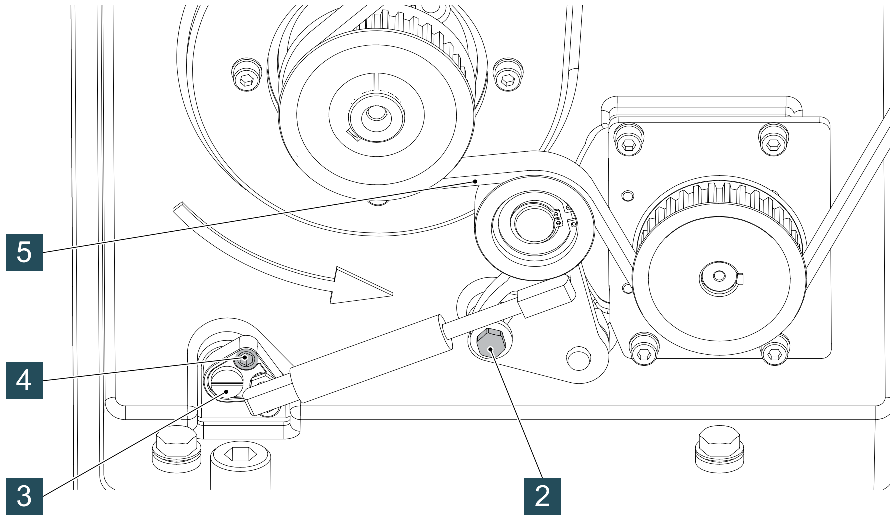


Figure 598: Brush motor tensioner

Installing the Timing Belt of the Brush Motor

1. Install the timing belt 5.
2. Turn the eccentric 3 clockwise to the end stop with a hexagonal key.
3. Tighten the screw 2.

   ⇨ The belt tensioner of the brush motor is tightened.
4. Install the cover 1.
5. Close the left sliding door of the longitudinal section.

   ⇨ The timing belt of the brush motor is installed

Result The timing belt of the brush motor is replaced.

10.4.5 Top Comb

This section contains the information about the repair work of top comb.

10.4.5.1 Doing a Check of the Clamping Effect of the Top-Comb Carrier

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Pull the spring 1 at the installed top comb manually to the front.

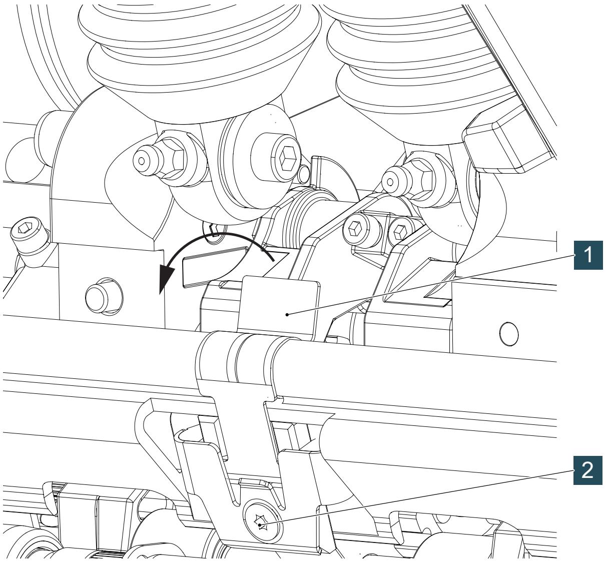


Figure 599: Side view of the top-comb carrier

2. Release the spring 1.
3. If the spring 1 is worn, replace the spring 1.
4. If the screw 2 is worn, replace the screw 2.

Result The check of the clamping effect of top-comb carrier is done.

10.4.5.2 Replacing the Bolts of a Top-Comb Carrier

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Put the top comb into the top comb gauge.
2. Remove the bolts 1 on the 2 sides of the top-comb carrier.

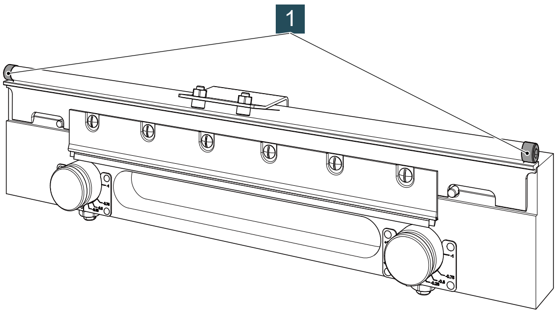


Figure 600: Bolts of the top-comb carrier

3. Replace the bolts 1.
4. Tighten the bolts 1 with a tightening torque of 22 Nm.

Result The bolts of the top-comb carrier are replaced.

10.4.5.3 Removing a Top Comb

CAUTION

The sharp edges!

Injury because of sharp edges

▶ Wear the safety gloves when touching top comb.

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. To release the top comb 2, tilt the spring 1 on both sides.

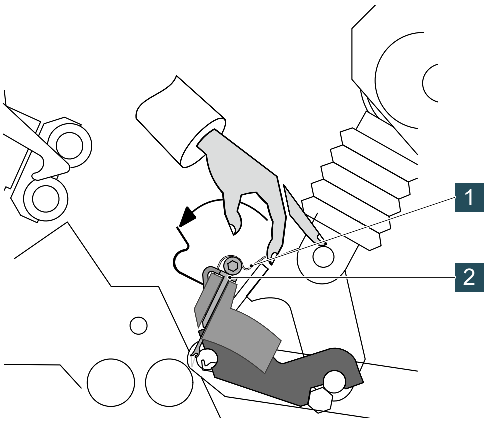


Figure 601: Direction of tilting the spring

2. **CAUTION! The sharp edges! Injury because of sharp edges.** Remove the top comb 2 with both hands by pulling up the top comb 2.

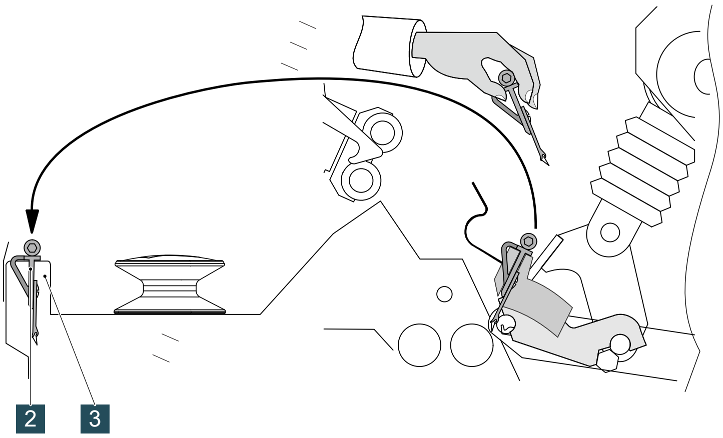


Figure 602: Removal of the top comb

3. To prevent damage of the top comb 2, put the top comb 2 in the holder 3.

Result A top comb is removed.

10.4.5.4 Installing a Top Comb

Prerequisites Make sure that the criteria are obeyed:

✓ The machine is at a standstill.

1. To release the spring 1, tilt the spring 1 in the direction of the arrow.

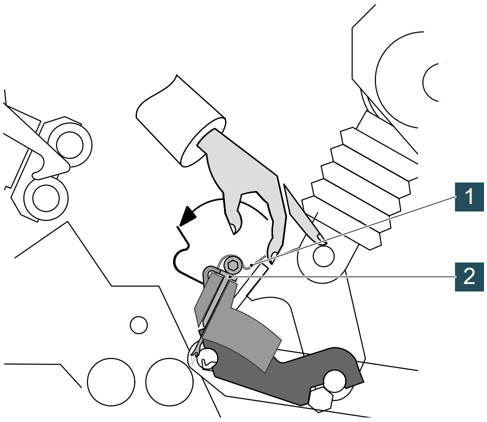


Figure 603: Direction of tilting the spring

2. Hold the top comb 2 with both hands.
3. Insert the top comb 2 into both guides at the same time.

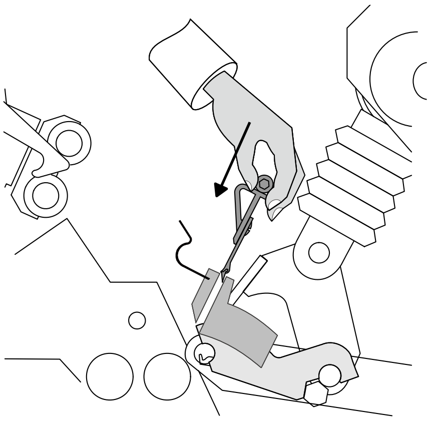


Figure 604: Direction of putting the top comb

4. Push the top comb 2 until the top comb 2 is in the stop.
5. Snap both springs 1 into the locking position.

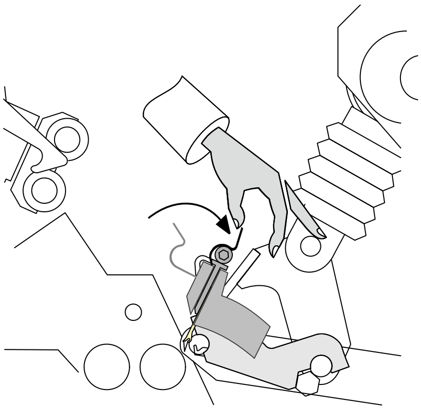


Figure 605: Direction of closing the spring

6. Check if both springs 1 are properly locked.

Result A top comb is installed.

10.4.6 Nipper

This section contains the information about the repair work of the nipper.

10.4.6.1 Doing a Check of the Basic Setting of the Nipper

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The machine is set to Index 24 (*refer to ▸ 290*).
- ✓ All top combs are removed.
- ✓ The detaching distance is set to 7 (*refer to ▸ 311*).
- ✓ The eccentric shaft is set to 7 (*refer to ▸ 313*).
- ✓ All raw material is removed.
- ✓ The nipper gauge is to be used.

1. Only measure the position of the nipper in the area B (10 mm).
2. Put the nipper gauge 1 with into the nipper.

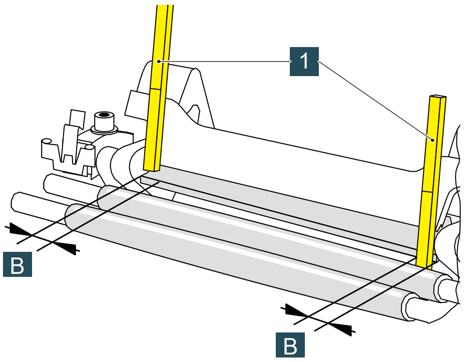


Figure 606: Nipper gauge

3. Put the nipper gauge 1 with the thin side into the area B.
   ⇨ The nipper gauge is correctly installed in the area B.
4. Put the nipper gauge 1 with the thick side A into the area B.
   ⇨ The nipper gauge is not correctly installed in the area B.

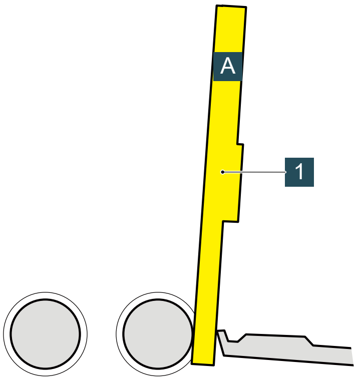
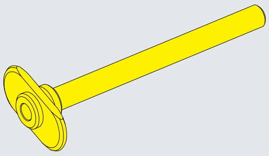


Figure 607: Nipper gauge

5. If the thin side of the nipper gauge 1 is not correctly installed in the area B, do the basic adjustment of the nipper (*refer to* ▸ *569*).
6. If the thick side A of the nipper gauge 1 is correctly installed in the area B, do the basic adjustment of the nipper (*refer to* ▸ *569*).
7. If none of the nipper is correctly installed, adjust the nipper shaft (*refer to* ▸ *571*).

Result The check of the basic setting of the nipper is done.

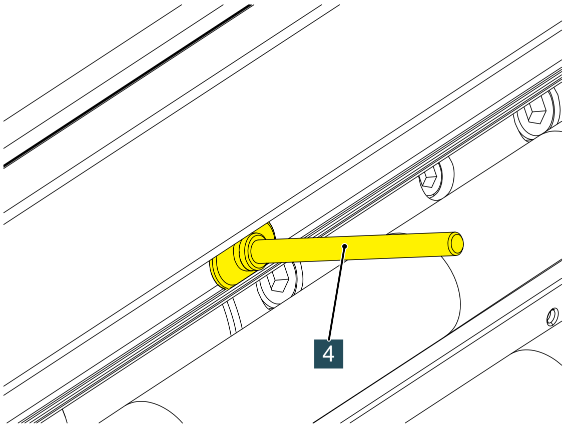
10.4.6.2 Measuring the Nipper Opening

Tool	Tool Name	Function Description
	Distance gauge	The distance gauge is used to set and measure the nipper opening amount.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The machine is set to index 24.
- ✓ The scale of the eccentric shaft is set to the same value as the detaching distance.
- ✓ The top comb is removed.
- ✓ A distance gauge is to be used.

1. Put the distance gauge 4 between the top nipper plate and the bottom nipper plate with the long edges horizontal.



2. Make sure that the distance gauge 4 is in the nipper slot and is in the middle of the nipper.
3. Turn the distance gauge 4 90°.

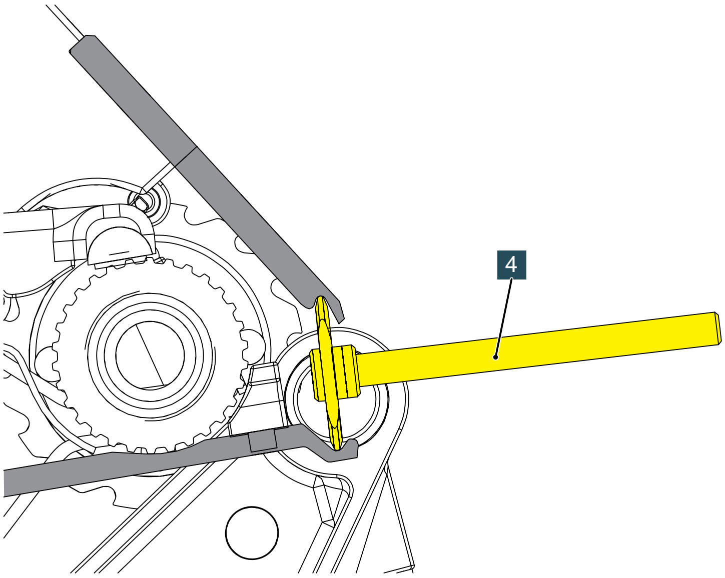


Figure 608: Distance gauge between the nippers

4. If the distance between the 2 nipper slots is larger than or smaller than the edge distance of the distance gauge 4, speak to a Rieter engineer.

Result The nipper opening is measured.

10.4.6.3 Doing the Basic Adjustment of the Nipper

To connect the nipper, the nipper is to be adjusted on the left side and the right side at the same time.

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

✓ The check of the basic adjustment of the nipper is done (*refer to* ▸ *567*).

1. Loosen the 4 screws 1.

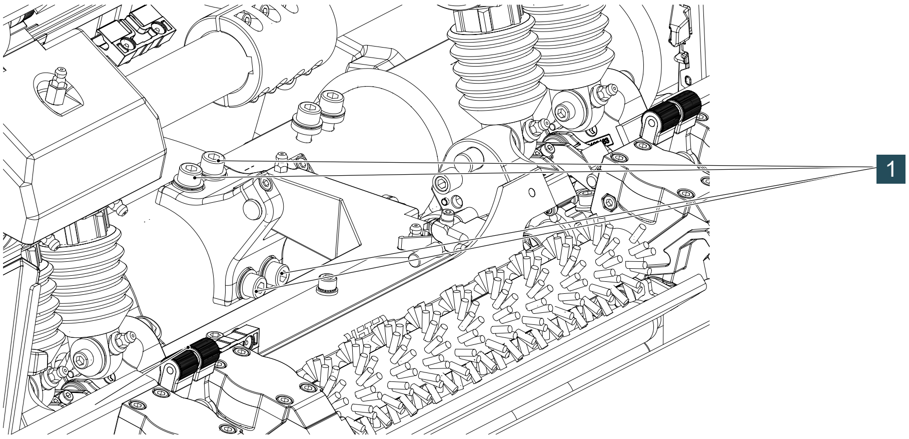


Figure 609: Screws at the nipper carrier

2. To do the basic adjustment of the nipper 3 on the left side and the right side at the same time, tap the nipper carrier 2.

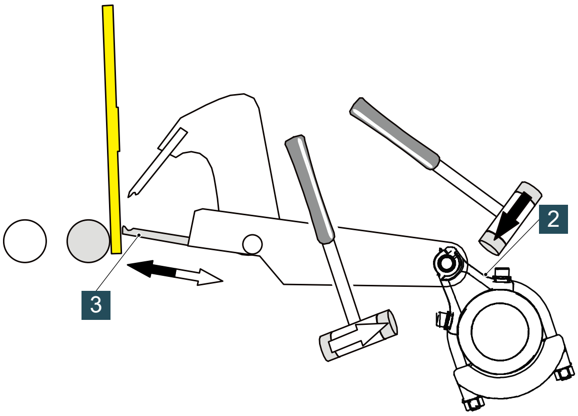


Figure 610: Nipper adjustment

3. Make sure that the thin side of the nipper gauge is installed correctly.
4. Make sure that the thick side of the nipper gauge is not installed.
   ⇨ If the thin side of the nipper gauge can be inserted, while the thick side of the nipper gauge cannot be inserted, the adjustment is correct.
5. Make sure that the axial distances A of the nipper are between 0.1 and 0.3 mm.

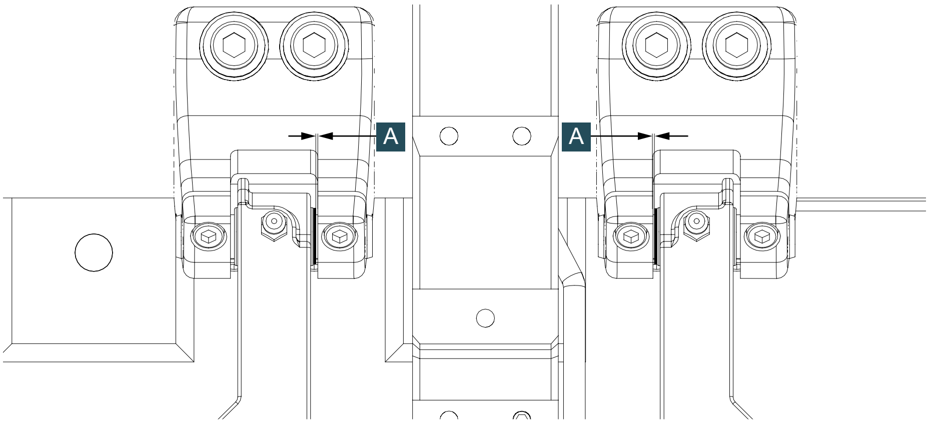


Figure 611: Clearance of the nipper

6. Tighten the screws 1 with a tightening torque of 28 Nm.
7. Measure the position of the nipper (*refer to ▸ 567*).

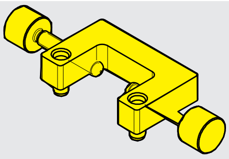
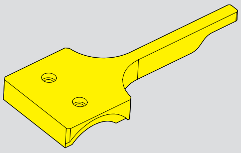
Result The basic adjustment of the nipper is done.

10.4.6.4 Setting the Nipper Shaft

The nipper shaft is only to be adjusted, if the basic adjustment of the nipper is not possible to be done or the shaft is not in the correct axial position after the transport.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The position of the nipper is measured (*refer to ▸ 567*).
- ✓ The nippers are removed (*refer to ▸ 577*).
- ✓ An adjusting device is to be used.
- ✓ A nipper shaft gauge is to be used.

Tool	Tool Name	Function Description
	Adjusting device	The adjusting device is used for setting the detaching distance.
	Nipper shaft gauge	The gauge is used for the basic setting of the nipper shaft.

1. Remove the 4 screws 1 at the 4th combing unit.

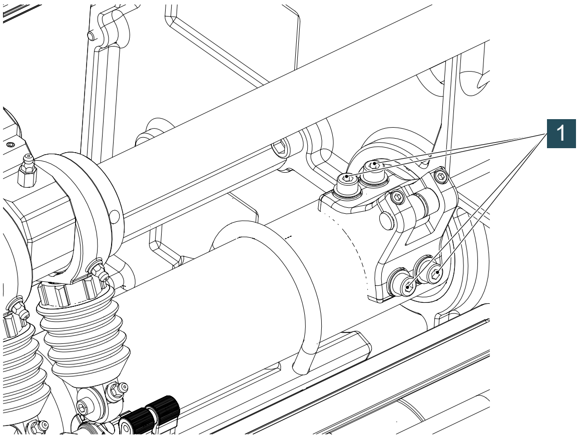


Figure 612: Nipper carrier

2. Remove the nipper carrier.
3. Set the machine to Index 24 (*refer to ▸ 290*).
4. Lock the gear with the index-locking pin 2.
5. If the index-locking pin is not possible to be put into the hole, release the brake and turn the pulley until the index-locking pin is possible to be put into the hole.
6. Set the main switch to the position OFF and padlock the main switch.

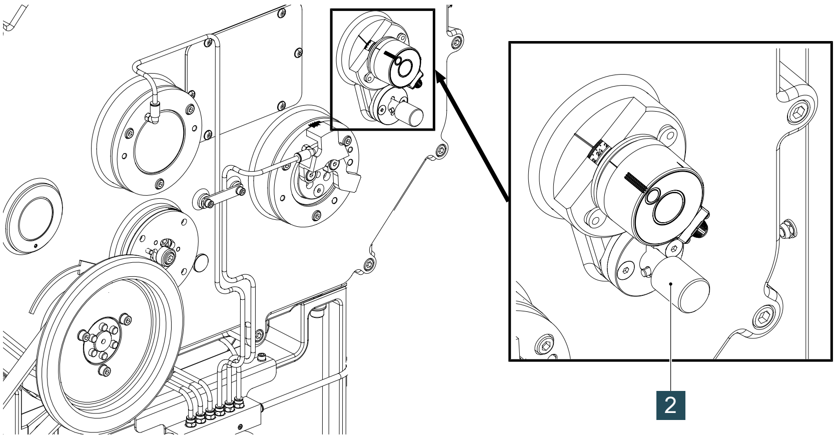


Figure 613: Index-locking pin

7. Loosen the 3 screws 4 until the screw heads touch the clamping piece 12.

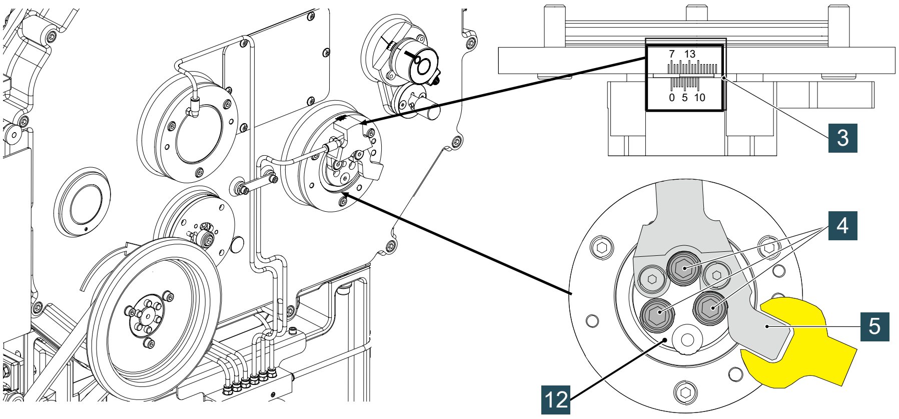


Figure 614: Adjusting device of the nipping distance

8. To adjust the lever 5 approximately to the tick mark 8 on the ruler 3, use an open-end wrench no. 24.
9. Install the nipper shaft gauge 6.

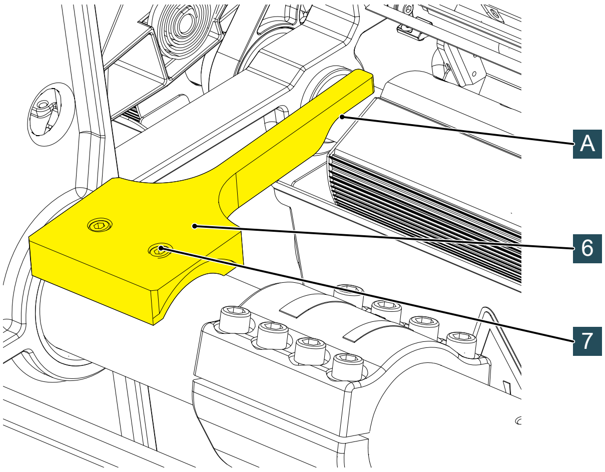


Figure 615: Nipper shaft gauge

10. Do the centering of the nipper shaft gauge 6 with the dowel screw 7.
11. Make sure that no distance is between the nipper shaft gauge 6 and the frame.
12. To adjust the lever 5 carefully to the tick mark 7.5, use an open-end wrench no. 24.
13. Measure the distance between the nipper shaft gauge and the circular-comb shaft at the position A with a feeler gauge.
14. Put the adjusting device 8 into the holes 9.

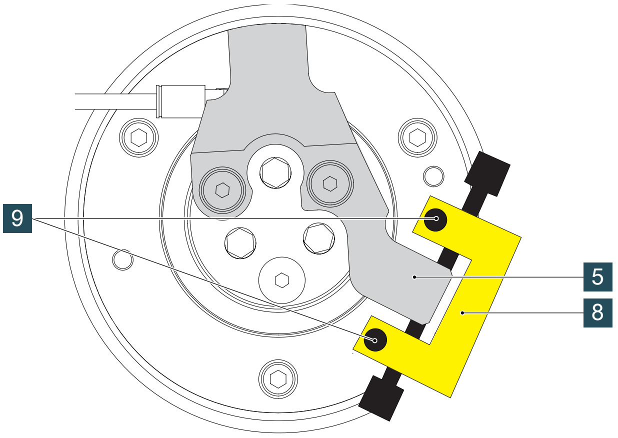


Figure 616: Adjusting device at the detaching distance unit

15. To adjust the detaching distance accurately to the tick mark 7, use the adjusting device 8.
16. After each setting of 0.1 mm, measure the distance between the nipper shaft gauge and the circular-comb shaft at position A with a feeler gauge.
17. Adjust the lever 5 to the tick mark 7 until the distance between the nipper shaft gauge and the circular-comb shaft at position A is 0.
18. Tighten the 3 screws 4 with a tightening torque of 135 Nm.
19. Remove the adjusting device 8.
20. Loosen the 3 screws 10.
21. To turn the scale ring 11 until the scale 3 shows accurately 7, use a screwdriver.
22. Tighten the 3 screws 10.

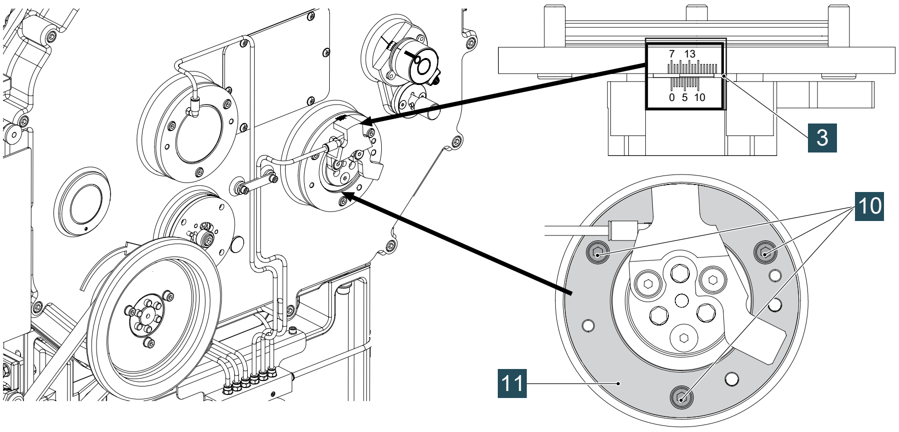


Figure 617: Scale ring

23. Remove all tools.
24. Unlock the index-locking pin.

25. Install the nipper carrier with the nipper.
26. Tighten the 4 screws 1 with a tightening torque of 28 Nm.
27. Measure the position of the nipper (*refer to* ▸ *567*).
28. If the nipper is not in the correct position, do the basic adjustment of the nipper (*refer to* ▸ *569*).

Result The nipper shaft is set to its default.

10.4.6.5 Replacing the Torsion Rod

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Open the nipper.
2. Make sure that the nipper that is adjacent to the opened nipper is closed.
3. Loosen the bolt 4.

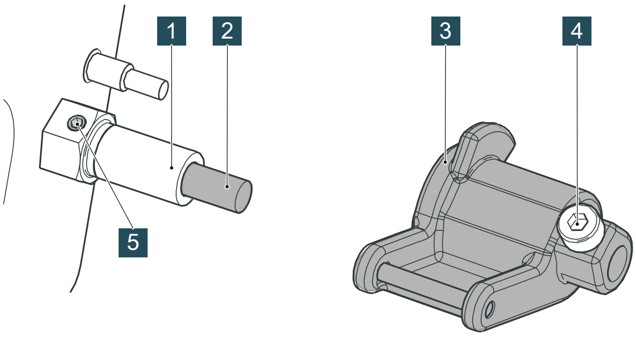


Figure 618: Torsion rod

4. Pull out the pawl 3.
5. To see the 2 threaded pins 5, turn the bolt 1.
6. Loosen the 2 threaded pins 5.
7. Pull out the torsion rod 2.
8. Clean and dry the bore of the bolt 1.
9. Apply chalk powder onto the torsion rod 2.
10. Install the torsion rod 2 to the end stop of the bolt 1.
11. Tighten the threaded pins 5 until the threaded pins 5 have the same heights that are out of the bolt 1.

    ⇨ The clamping of the torsion rod 2 is correct.
12. Tighten the bolt 1.
13. Install the pawl 3.
14. Close the nipper.

Result The torsion rod is replaced.

10.4.6.6 Setting the Counterweight of the Nipper Shaft

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The machine is set to the index 24 (*refer to* ▸ *290*).
- ✓ The detaching distance is set to 7 (*refer to* ▸ *311*).
- ✓ A counterweight gauge is to be used.

1. Loosen the 4 nuts 3 on the counterweight.

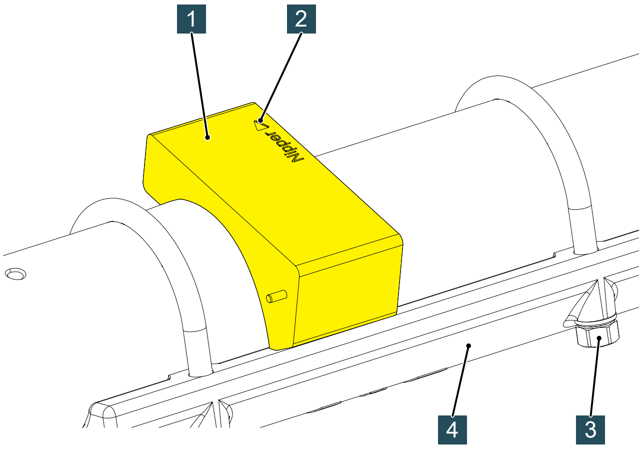


Figure 619: Counterweight gauge

2. Put the counterweight gauge 1 on the counterweight 4.
3. Make sure that the arrow 2 on the counterweight gauge is in the direction of the nipper.
4. Put a spirit level on the top of the counterweight gauge 1.

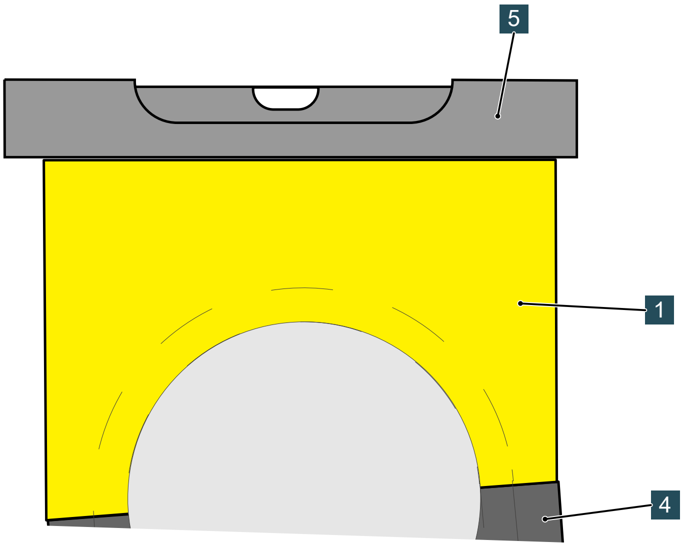


Figure 620: Spirit level and counterweight gauge

5. Set the spirit level to the horizontal position.
6. Align the counterweight 4 until the counterweight is in the center of the nipper cranks and the top side of the counterweight gauge is horizontal.
7. Tighten the nuts 3 with a tightening torque of 50 Nm.

Result The counterweight of the nipper shaft is set.

10.4.6.7 Replacing the Nipper

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The feed roller is removed (*refer to ▸ 580*).

Removing the Nipper

1. Hold the clamping piece 2 to make sure that the clamping piece 2 does not fall into the machine.
2. Loosen the screw 1.
3. Remove the top-comb carrier 3.
4. Close the nipper with the nipper lever.

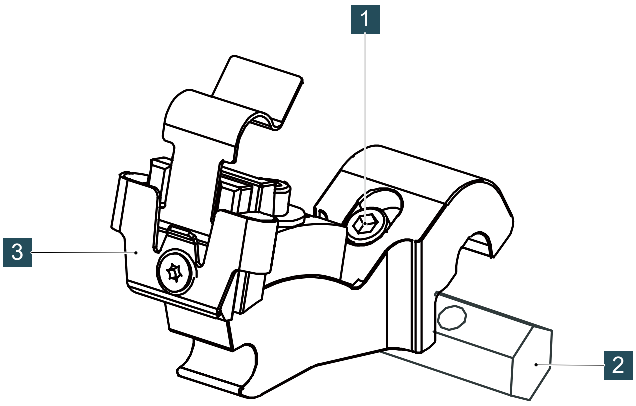


Figure 621: Top-comb carrier

5. Loosen the nuts 4 and the spring assemblies 5 at the same time.

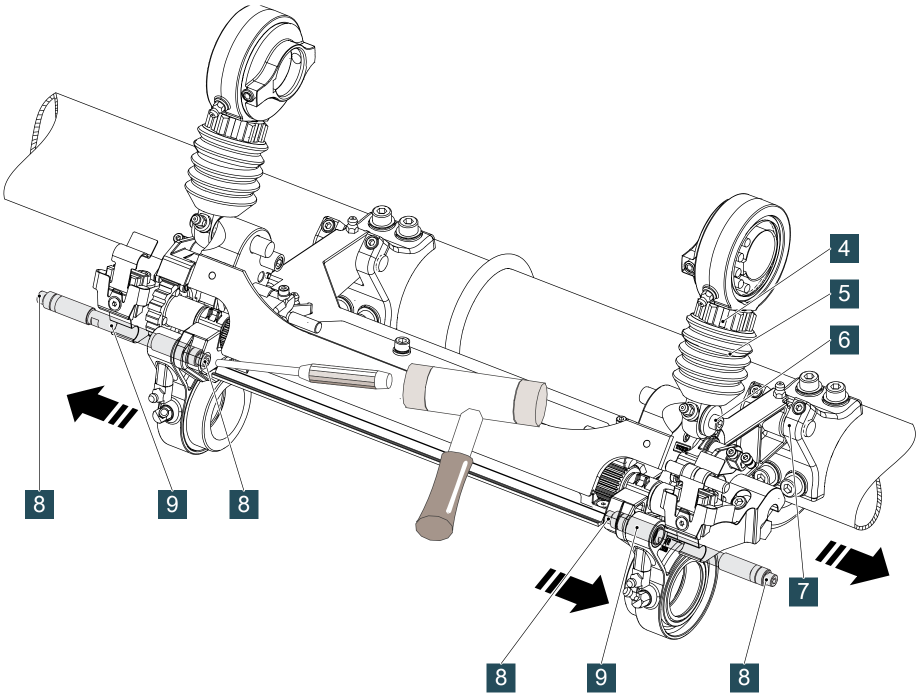


Figure 622: Nipper

6. Remove the screws 6 on the 2 sides.
7. Pull out the spring assemblies 5.
8. Turn the screws 8 by 1 revolution while the bolt 9 at the wrench flat is held.
   ⇨ The tensioning elements on the bolt 9 are loosened.
9. Tap the bolts 9 to the outer side.
   ⇨ The nipper is loosened.
10. Loosen the screws 11.

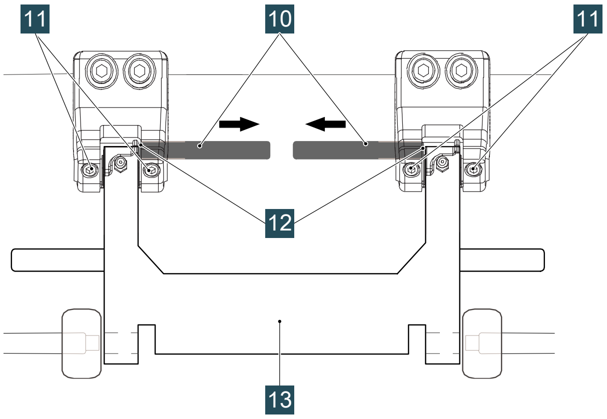


Figure 623: Top view of the nipper

11. Tap the bolts 10 to the inner side.
12. Make sure that the washers 12 do not fall.
13. Remove the washers 12.
14. Remove the nipper 13.
    ⇨ The nipper is removed.

Installing the Nipper

1. Put the nipper 13.
2. Tap the bolts 10 while the washers 12 become installed to their initial position.
3. Tighten the screws 11 with a tightening torque of 5 Nm.
4. Tap the bolts 9 until the bolts are at their initial position.
5. Install the top-comb carrier 3.
6. Put the top-comb carrier 3 to the middle of the nipper.
7. Tighten the screw 1 with a tightening torque of 10 Nm.
8. Tighten the screws 8 while the bolt 9 is held at the wrench flat with a tightening torque of 7 Nm.
9. Put the spring assemblies 5.
10. Tighten the screws 6 tightly.
11. Install the nuts 4 carefully.
12. Tighten the nuts 4 at the same time until the nuts are at the stop.
13. Make sure that the lubricating nipples do not become damaged.
14. Tighten the nuts 5 with the hand.
15. Do the basic adjustment of the nipper (*refer to* ▸ *569*).
16. Install the pawls (*refer to* ▸ *308*).
    ⇨ The nipper is installed.

Result The nipper is replaced.

10.4.6.8 Setting the Feed Trough Plate

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ A nipper caliber is to be used.

1. Set the feed trough plate 1 to make sure that the feed trough plate 1 is parallel with the feed roller.

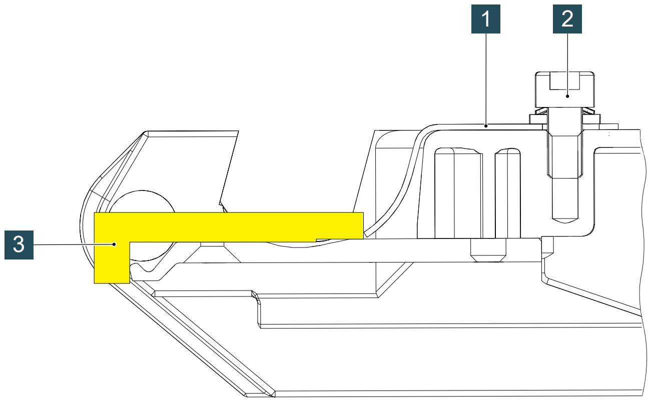


Figure 624: Side view of the feed through plate

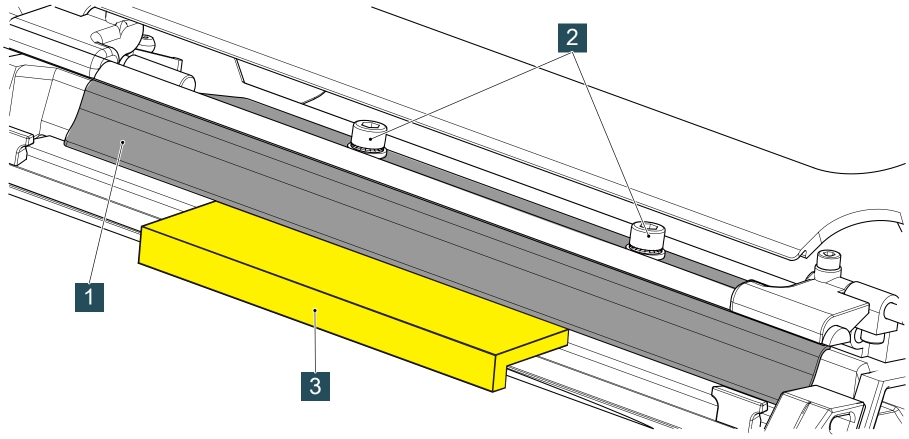


Figure 625: Feed through plate

2. Remove the feed roller.
3. Loosen the screws 2.
4. Install the nipper caliber 3.
5. Push the feed trough plate 1.

   ⇨ The feed trough plate 1 touches the nipper caliber 3 tightly.
6. Hold the feed trough plate 1.
7. Tighten the screws 2.

Result A feed through plate is set.

10.4.6.9 Removing the Feed Cylinder

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ The nipper is opened (*refer to ▸ 296*).

1. Turn the wiper 1 upward.

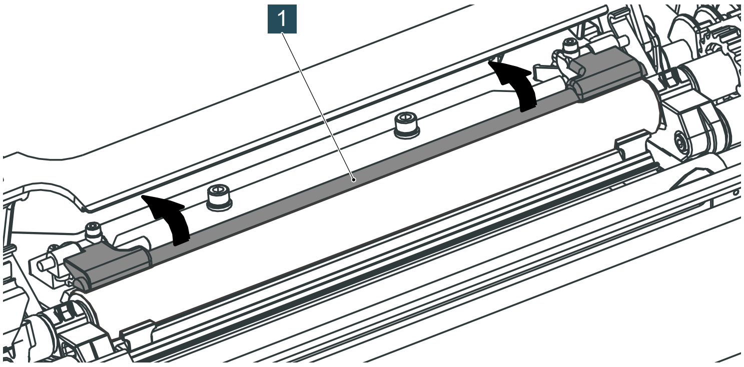


Figure 626: Wiper

2. Pull out the feed cylinder 2.

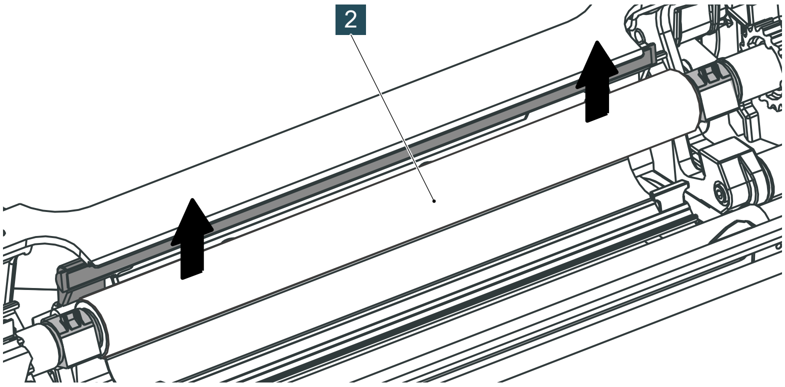


Figure 627: Removal of the feed cylinder

Result The feed cylinder is removed.

10.4.6.10 Installing the Feed Cylinder

Prerequisites Make sure that the criteria are obeyed:

- ✓ The black ratchet wheel is on the right.
- ✓ The nipper lever is to be used.

1. Lift the wiper 1.

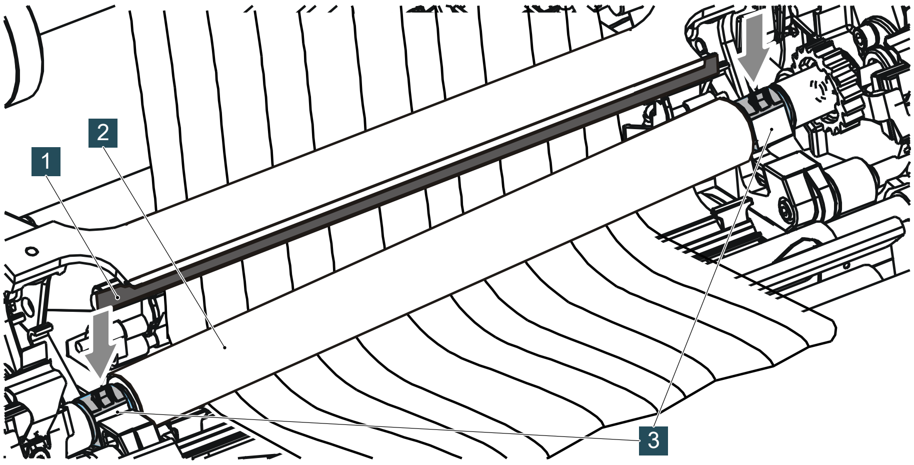


Figure 628: Installation of feed cylinder

2. Hold the wiper 1 in position.
3. Attach the feed cylinder 2.
4. Engage the guide of the bushing 3 into the nipper on both sides of the feed cylinder.
5. Release the wiper 1.
6. Close the nipper with the nipper lever.

Result The feed cylinder is installed.

10.4.7 Detaching Roller

This section contains the information about how to repair the detaching roller.

10.4.7.1 Removing the Bottom Cylinders

Prerequisites Make sure that the criteria are obeyed:

- ✓ An industrial warm-air blower is to be used.
- ✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Increase the temperature of the roller of the 4th combing unit to between 80 and 100℃ with an industrial warm-air blower.
2. Turn the bottom cylinder in direction of the arrow.

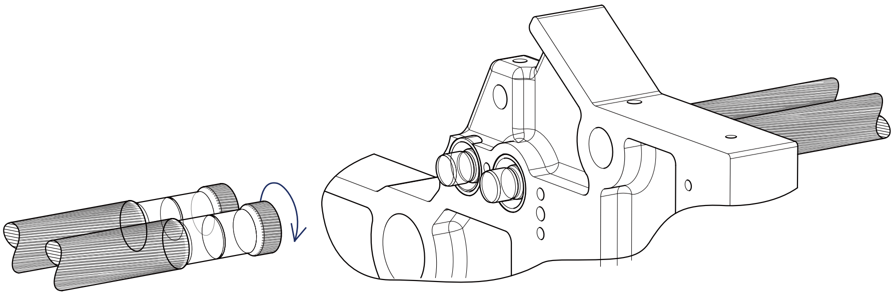


Figure 629: Bottom cylinder

3. Move the bottom cylinders 1 carefully in the operation direction until the needle roller bearings come into view.

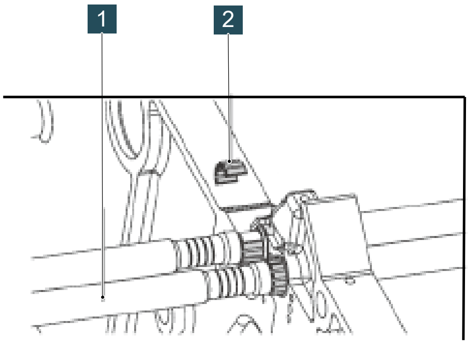


Figure 630: Needle roller bearing at the bottom cylinder

4. Make sure that the bearing shells 2 of the roller bearings do not fall out.
5. Remove the needle roller bearings.

Result The bottom cylinders are removed.

10.4.7.2 Installing the Bottom Cylinders

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The activator Loctite is to be used.
- ✓ The adhesive Loctite 542 is to be used.

1. Put the cylinder shaft into the machine frame.
2. Apply grease to the journals of the shaft.
3. Put the shells of the needle roller bearings onto the journals.
4. Push the needle roller bearings halfway into the bearing bushings.

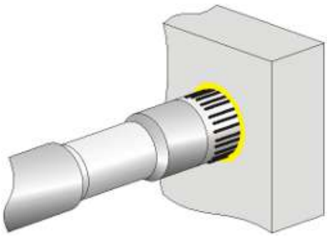


Figure 631: Detaching cylinder

5. Make sure that all bearing shells are on the cylinder shaft.
6. Remove the grease from the thread with the activator LOCTITE.

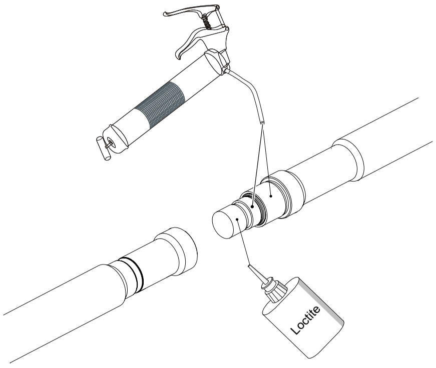


Figure 632: Cylinder shaft

7. Apply the adhesive Loctite 542 onto the threads.
8. Apply the grease onto the cylinder shaft.
9. To connect the cylinder shaft, turn the shaft in the direction of the arrow in the figure that follows with the needle roller bearings and the flat position at the end of the shaft.

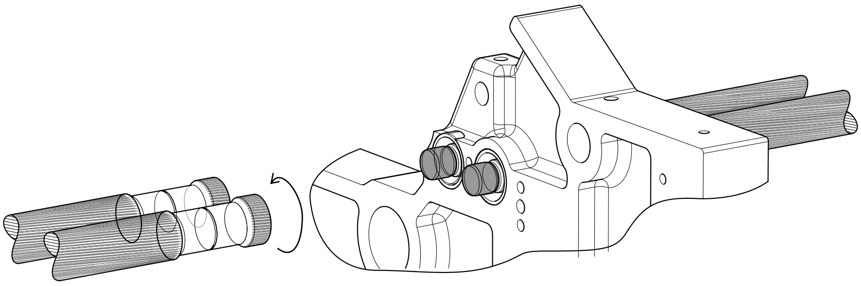


Figure 633: Installation direction of the bottom cylinder

10. Make sure that only the detaching cylinders are to be glued because of the pilgrim step movement.

Result The bottom cylinders are installed.

10.4.7.3 Replacing the Wipers of the Detaching Roller

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Wipers

1. Remove the web bowl.
2. Remove the screws 1 on the 2 sides of the wiper holder 2.

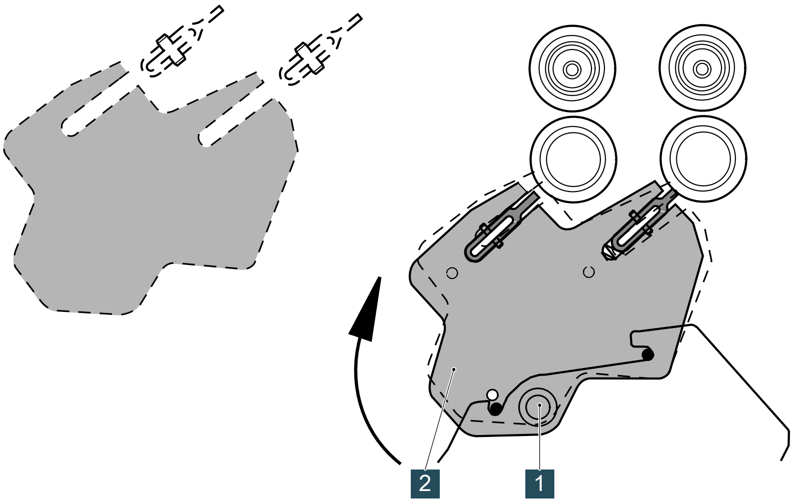


Figure 634: Wiper holders

3. Lift the 2 wiper holders 2.
4. Pull out the 2 wiper holders 2.

   ⇨ The wipers are removed.

Installing the Wipers

1. Put the wiper holders 2 into the fly duct 5.

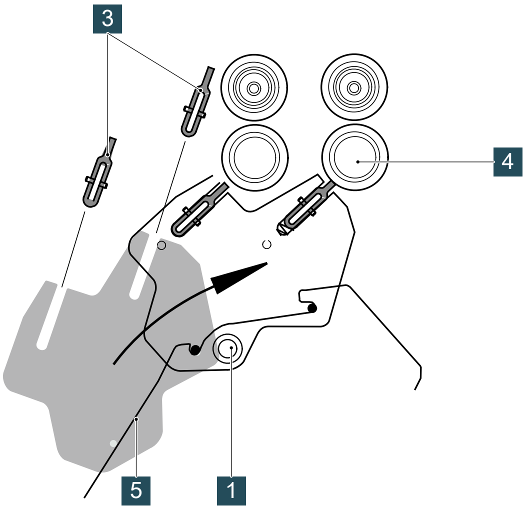


Figure 635: Wipers

2. Install the wipers 3.
3. Push the wiper holders 2 below the detaching roller 4.
4. To attach the wiper holders 2, install the screws 1.
5. Do a check of the wipers 3.

   ⇨ The wipers are installed.

Result The wipers of the detaching roller are replaced.

10.4.8 Table Calender

This section contains the information about how to repair the table calender.

10.4.8.1 Replacing the Plastic Gears

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Plastic Gears

1. Loosen all screws 1 of the roller 2 at the 8th combing unit.

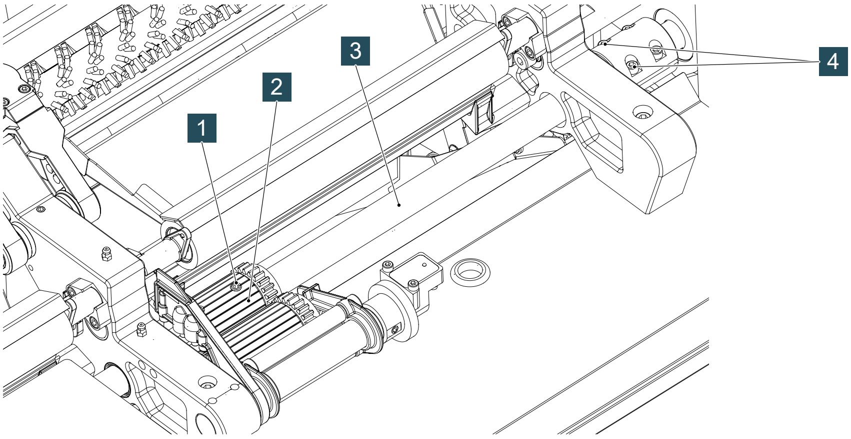


Figure 636: Plastic gear

2. Push the roller 2 onto the shaft 3.
3. Remove the shaft 3 with the roller 2.
4. Do this procedure for combing units 7 – 2 again.
5. Loosen all screws 1 at the roller 2 at the 1st combing unit.
6. Push the roller 2 onto the shaft 3.
7. Loosen the 2 screws 4 of the coupling.
8. Remove the shaft 3 with the roller 2.
9. Remove the 4 screws 5.
10. Remove the ring 6.
11. Remove the plastic gear 7.

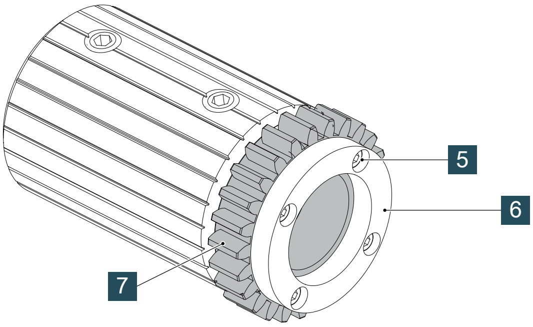


Figure 637: Plastic gear

⇨ The plastic gears are removed.

Installing the Plastic Gears

1. Install a new plastic gear 7.
2. Install the shaft 3 with the roller 2 at the 1st combing unit.

3. Align the roller 2 with the shaft 3 and the opposite roller.
4. Tighten the 2 screws 4.
5. Tighten all screws 1 at the roller 2.
6. Install the shaft 3 with the roller 2 at the combing units 2 – 8.
7. Align the roller 2 with the shaft 3 and the opposite roller.
8. Tighten all screws 1 at the roller 2.
9. Make sure that the clamping screw 8 is on the flat position of the shaft 9 vertically.

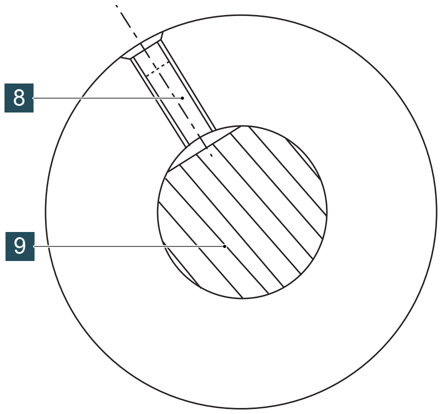


Figure 638: Side view of the clamping screw at the shaft

⇨ The plastic gears are installed.

Result The plastic gears are replaced.

10.4.9 Doubling Table

This section contains the information about how to repair the doubling table.

10.4.9.1 Setting the Eccentric Sliver Guide

The eccentric sliver guide is installed on the table plate with a bolt. The position 8 o'clock in the figure shows the sliver direction to the bolt.

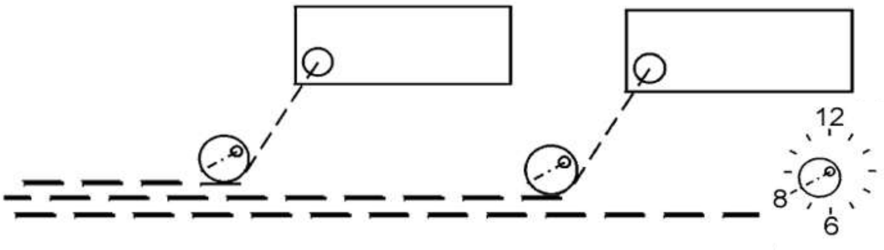


Figure 639: Eccentric sliver guide

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Turn the sliver guide to set the position 8 o'clock.

   ⇨ The piecing periods in the sliver occur at different time when the sliver moves into the drafting system.

Result The eccentric sliver guide is set.

10.4.10 Drafting System

This section contains the information about how to repair the drafting system.

10.4.10.1 Replacing the Belt of the Feed Roller

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Belt from the Feed Roller

1. Open the cover of the main draft belt.
2. Remove the belt from the pulleys at the positions W2 (*refer to ▸ 593*).
3. Remove the timing belt from the pulleys at the positions Nw1 and Nw2 (*refer to ▸ 590*).
4. Loosen the screws 1 with the hexagonal key.

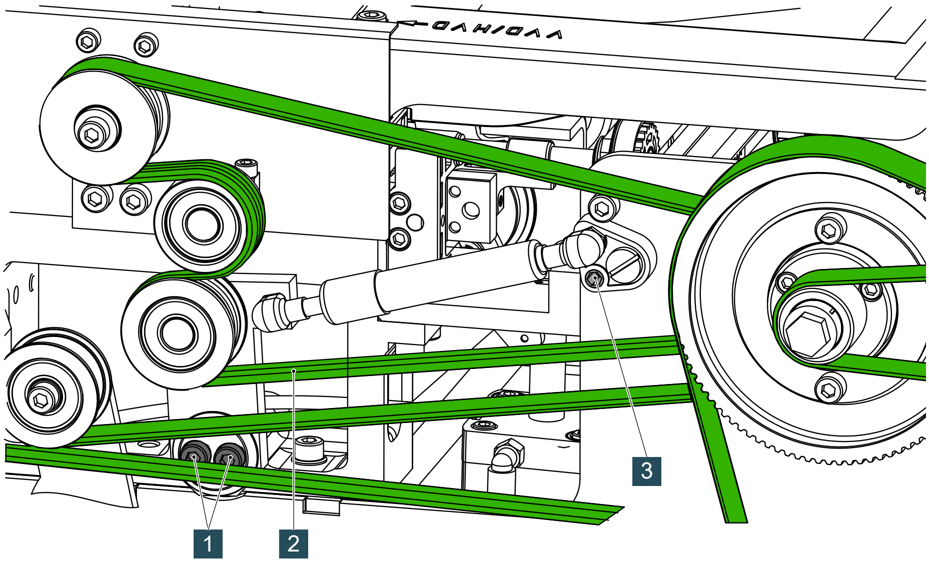


Figure 640: Belt of the feed roller

5. Turn the eccentric 3 counterclockwise with the hexagonal key.

   ⇨ The belt 2 is loosened.

6. Remove the belt 2.

⇨ The belt is removed from the feed roller.

Installing the Belt of the Feed Roller

1. Put the new belt 2 onto the feed roller.
2. Put the V-ribbed belt 2 correctly into the grooves of the pulleys and the tension rollers.
3. Turn the eccentric 3 clockwise to the limit position with the hexagonal key.
   ⇨ The belt 2 is tightened.
4. Tighten the screws 1 with the hexagonal key.
5. Install the timing belt on the pulleys at the positions Nw1 and Nw2 (*refer to* ▸ *590*).
6. Install the belt on the pulleys at the position W2 (*refer to* ▸ *593*).
7. Close the cover of the main draft belt.
   ⇨ The belt of the feed roller is installed.

Result The belt of the feed roller is replaced.

10.4.10.2 Replacing the Belt at the Position Nw1/Nw2

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Belt at the Position Nw1/Nw2

1. Open the cover of the main draft belt.
2. Put the hexagonal key into the screw 6 of the tension roller.

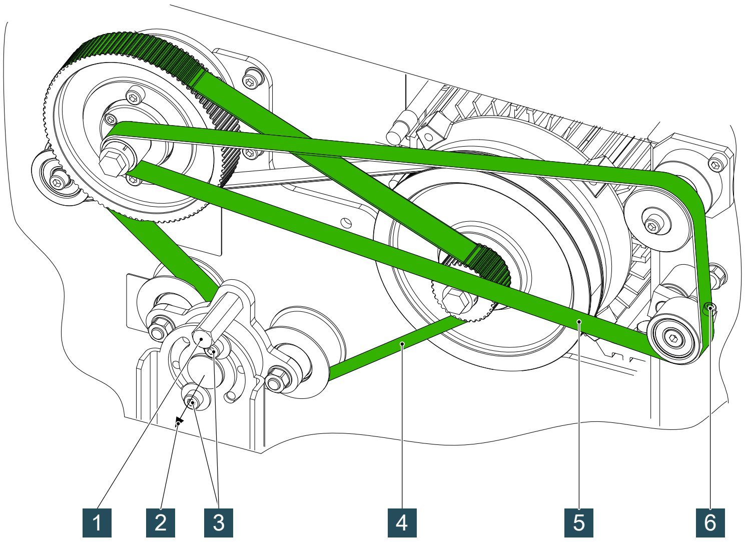


Figure 641: Belt at the position Nw1/Nw2

3. To release the tension from the belt 5, turn the tension roller clockwise with the hexagonal key.
   - ⇨ The tension is released from the belt 5.
4. Remove the belt 5.
5. Loosen the screws 3.
6. Turn the tension lever 1 with the box wrench and with the axis 2 counterclockwise.
   - ⇨ The tension is released from the belt 4.
7. Remove the belt 4.
   - ⇨ The belt at the position Nw1/Nw2 is removed.

Installing the Belt at the Position Nw1/Nw2

1. Put a new belt to the position Nw1/Nw2.
2. Turn the tension lever 1 with the box wrench and with the axis 2 clockwise.
3. Tighten the screws 3.
   - ⇨ The belt 4 is tightened.
4. Put on the removed belt 5.
5. Put the hexagonal key into the screw 6 of the tension roller.
6. To tighten the belt 5, turn the tension roller counterclockwise with the hexagonal key.
   - ⇨ The belt 5 is tightened.
7. Close the cover of the main draft belt.
   - ⇨ The belt is installed at the position Nw1/Nw2.

Result The belt at the position Nw1/Nw2 is replaced.

10.4.10.3 Replacing the Belt at the Position W1

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Belt at the Position W1

1. Open the cover of the break draft belt.
2. Remove the cover that is above the belt 4 at the position W1.
3. Loosen the screw 3.

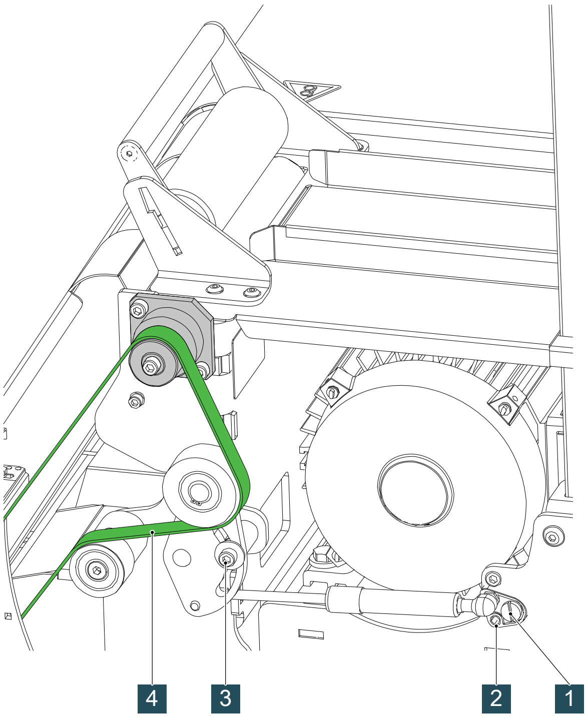


Figure 642: Belt at the position W1

4. Put the hexagonal key into the hole 2.
5. Turn the hexagonal key and the screw 1 counterclockwise.
6. Remove the hexagonal key.
   - ⇨ The tension is released from the belt 4.
7. Remove the belt 4.
   - ⇨ The belt at the position W1 is removed.

Installing the Belt at the Position W1

1. Put a new belt 4 to the position W1.
2. Put the hexagonal key into the hole 2.
3. Turn the hexagonal key and the screw clockwise to the end stop.
4. Tighten the screw 3.
   - ⇨ The belt 4 is tightened.
   - ⇨ The belt is installed at the position W1.
5. Install the cover that is above the belt 4.
6. Close the cover of the break draft belt.

Result The belt at the position W1 is replaced.

10.4.10.4 Replacing the Belt at the Position W2

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Belt at the Position W2

1. Open the cover of the main draft belt.
2. Put the hexagonal key into the screw 2 of the tension roller.

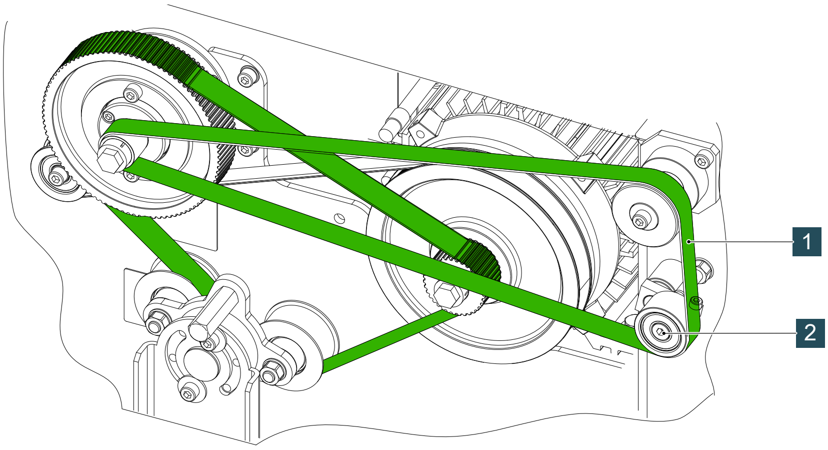


Figure 643: Belt at the position W2

3. To release the tension from the belt 1, turn the tension roller clockwise with the hexagonal key.
4. Remove the hexagonal key.
5. Remove the belt 1.

   ⇨ The belt at the position W2 is removed.

Installing the Belt at the Position W2

1. Put a new belt to the position W2.
2. Put the hexagonal key into the screw 2 of the tension roller.
3. To apply tension to the new belt, turn the tension roller counterclockwise to the end stop with the hexagonal key.
4. Remove the hexagonal key.
5. Close the cover of the main draft belt.

   ⇨ The belt is installed at the position W2.

Result The belt at the position W2 is replaced.

10.4.10.5 Replacing the Belt at the Position W3

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Belt at the Position W3

1. Open the cover of the main draft belt.
2. Remove the timing belt from the pulleys at the positions Nw1 and Nw2.
3. Loosen the screws 2.

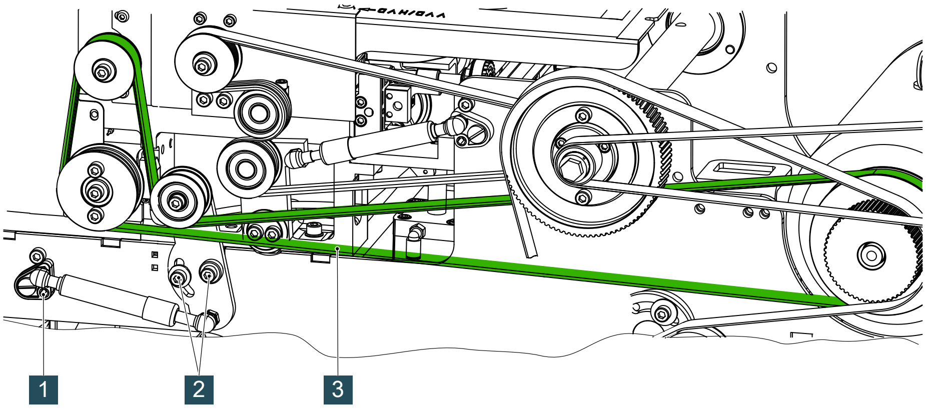


Figure 644: Belt for the pulley W3

4. Turn the eccentric 1 clockwise from the limit position with the hexagonal key.
   - ⇨ The tension is released from the belt 3.
5. Remove the belt 3.
   - ⇨ The belt at the position W3 is removed.

Installing the Belt at the Position W3

1. Put a new belt 3 to the position W3.
2. Put the wedge profile of the belt 3 correctly into the grooves of the pulleys and the tension rollers.
3. Turn the eccentric 1 counterclockwise to the limit position with the hexagonal key.
   - ⇨ The belt 3 is tightened.
4. Tighten the screws 2.
5. Install the timing belt for the pulleys at the positions Nw1 and Nw2.
6. Close the cover of the main draft belt.
   - ⇨ The belt is installed at the position W3.

Result The belt at the position W3 is replaced.

10.4.10.6 Replacing the Belt at the Position W4

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Belt at the Position W4

1. Open the cover of the main draft belt.
2. Loosen the screws 1.

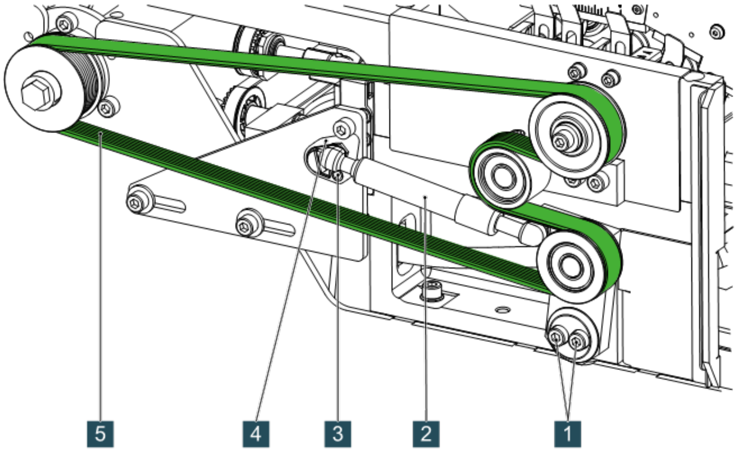


Figure 645: Belt at the position W 4

3. Put the hexagonal key into the hole 3.
4. Turn the eccentric 4 clockwise to the end stop with the installed hexagonal key.
   - ⇨ The gas pressure spring 2 is loosened.
   - ⇨ The tension is released from the belt 5.
5. Remove the hexagonal key.
6. Remove the belt at the position W4.
   - ⇨ The belt at the position W4 is removed.

Installing the Belt at the Position W4

1. Put a new belt onto the pulleys.
2. Put the hexagonal key into the hole 3.
3. Turn the eccentric 4 counterclockwise to the end stop with the installed hexagonal key.
   - ⇨ Tension is applied to the belt at the position W4.
4. Tighten the screws 1.
   - ⇨ The belt is installed at the position W4.

Result The belt at the position W4 is replaced.

10.4.10.7 Applying Tension to the Belt at the Middle Cylinder

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Open the cover of the break draft belt.
2. Turn the eccentric 2 clockwise from the limit position with the hexagonal key.

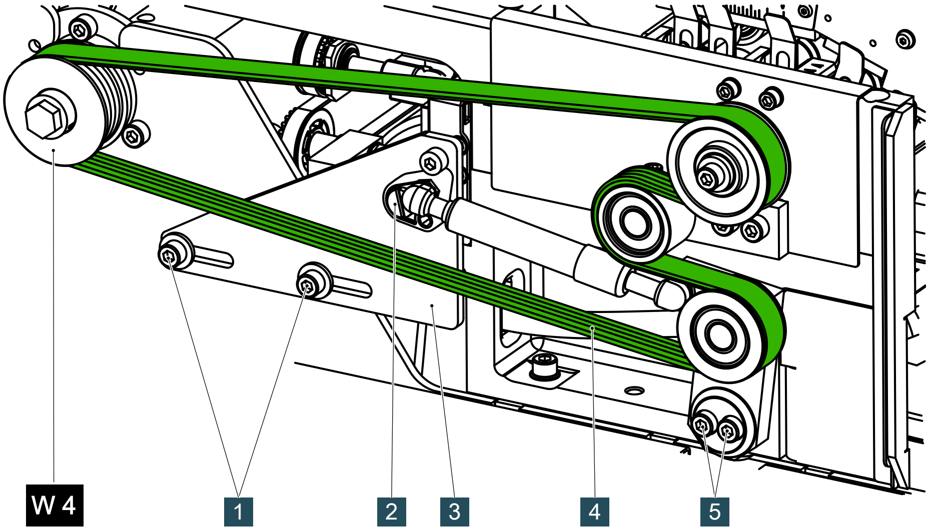


Figure 646: Belt at the middle cylinder

⇨ The tension is released from the belt 4.

3. Loosen the screws 1.
4. To apply tension to the belt, move the plate 3.
5. Tighten the screws 1.
6. Turn the eccentric 2 counterclockwise to the end stop with the hexagonal key.
7. Tighten the screws 5.
8. Close the cover of the break draft belt.

Result Tension is applied to the belt at the middle cylinder.

10.4.10.8 Replacing the Top Rollers

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

⚠ **CAUTION**

Falling loading arm!

Risk of crushing the hands

▶ Do NOT put the hands below the loading arm when the loading arm becomes lowered.

Removing the Top Rollers

1. Open the drafting system hood.
2. Lift the unlocked loading arm.
3. Hold the top feed roller 2.

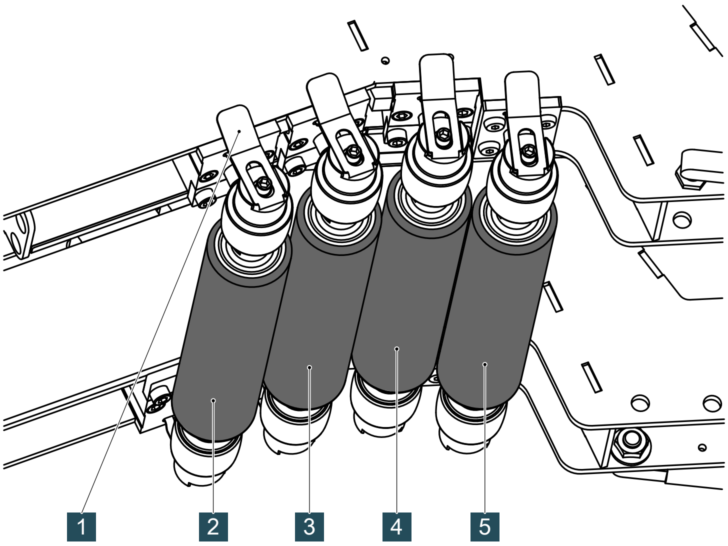


Figure 647: Top rollers

4. Push the spring holder 1 and remove the top feed roller 2 from the spring holder 1.
5. Remove the rollers 3, 4, and 5 in the same procedure that is given in the steps 3 and 4.

   ⇨ The top rollers are removed.

Installing the Top Rollers

1. Push the spring holder 1 and put the spring holder in the top feed roller 2.
2. Put the top rollers 3, 4, and 5 in the spring holders in the same procedure that is given in the step before.
3. Set the positions of the top rollers 2 and 3 (*refer to* ▸ *339*).
4. Set the drafting system load at the rollers 2 and 3 (*refer to* ▸ *340*).
5. **CAUTION! Falling loading arm! Risk of crushing the hands.** Move down the loading arm.
6. Close the drafting system load.

   ⇨ The top rollers are installed.

Result The top rollers are replaced.

10.4.10.9 Replacing the Top Roller Bearing

The related roller bearing is to be replaced if the top roller bearings are in 1 condition or more conditions that follow:

– The roller bearings are dirty.

– The roller bearings make noises.

– The roller bearings are hot.

– The roller bearings do not move smoothly.

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Remove the top roller (*refer to ▸ 596*).
2. Remove the sealing plug 4 with the hexagonal key.

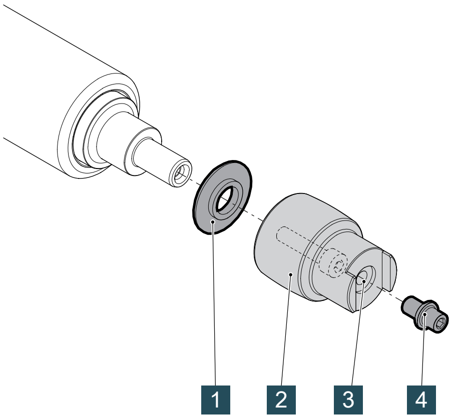


Figure 648: Top roller bearings

3. Loosen the hexagon screw from the hole 3.
4. Remove the top roller bearing 2 and the disk 1.
5. Put a new ball bearing in the top roller bearing 2 (*refer to ▸ 533*).
6. Put on the disk 1.
7. Put a new top roller bearing onto the roller.
8. Install the hexagon screw in the hole 3.
9. Install the sealing plug 4 with the hexagonal key.
10. Make sure that the installed top roller bearing moves smoothly.

Result The top roller bearings are replaced.

10.4.10.10 Replacing the Web Guides

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

CAUTION

Falling loading arm!

Risk of crushing the hands

- Do NOT put the hands below the loading arm when the loading arm becomes lowered.

Removing the Web Guides

1. Open the drafting system hood.
2. Lift the unlocked loading arm.
3. Loosen the threaded pin 2.

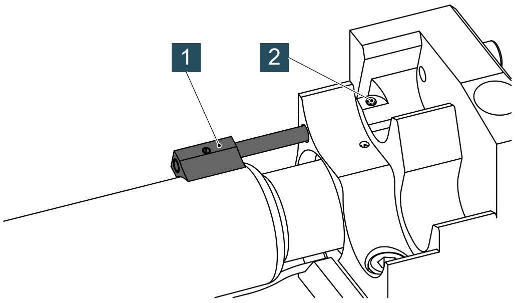


Figure 649: Web guides

4. Remove the web guide 1 from the hole.
5. Remove the web guide on the opposite side of the web guide 1 in the same procedure that is given in steps 3 and 4.

   ⇨ The web guides are removed.

Installing the Web Guides

1. Put a web guide with the groove that points upward into the hole.
2. Install the other web guide in the same procedure as given in the step 6.
3. Set the web guide 1 (*refer to* ▸ *341*).
4. **CAUTION! Falling loading arm! Risk of crushing the hands.** Move down the loading arm.
5. Close the drafting system.

   ⇨ The web guides are installed.

Result The web guides are replaced.

10.4.10.11 Replacing the Pressure Bar

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

CAUTION

Falling loading arm!

Risk of crushing the hands

▶ Do NOT put the hands below the loading arm when the loading arm becomes lowered.

Removing the Pressure Bar

1. Open the drafting system hood.
2. Lift the unlocked loading arm.
3. Turn up the holder 1 with the pressure bar 3.

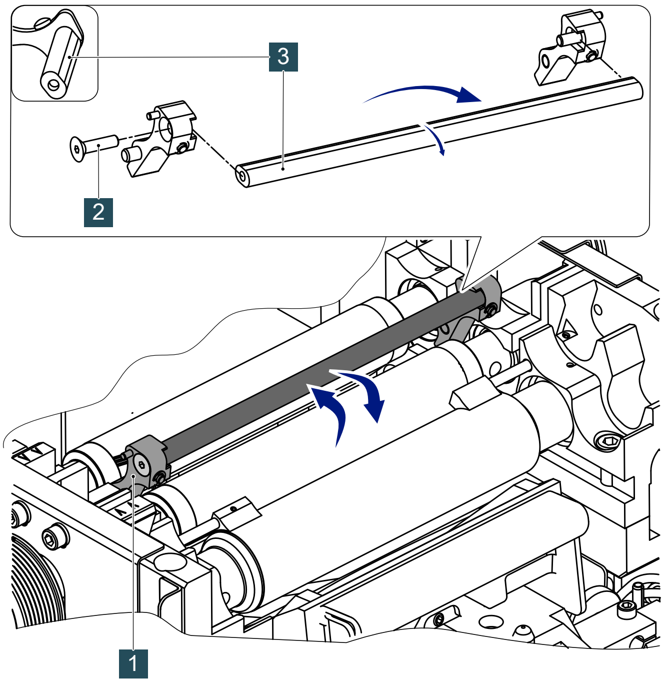


Figure 650: Pressure bar

4. Remove the screws 2.
5. Remove the pressure bar 3.

⇨ The pressure bar is removed.

Installing the Pressure Bar

1. Do a check of the surface of the pressure bar 3.
2. If the pressure bar 3 is worn, replace the pressure bar with a new bar.
3. Install the pressure bar 3 with the screws 2.
4. Turn down the holder 1 with the installed pressure bar 3.

⇨ The installed pressure bar is moved flexibly.

5. **CAUTION! Falling loading arm! Risk of crushing the hands.** Move down the loading arm.
6. Close the drafting system.

⇨ The pressure bar is installed.

Result The pressure bar is replaced.

10.4.10.12 Doing a Check of the Installation Status of the Web Funnel

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Make sure that the holder 3 is on the pins 2.

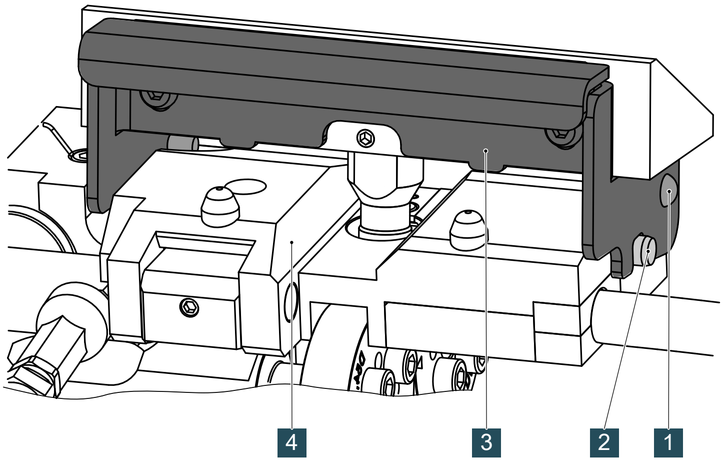


Figure 651: Web funnel

2. Make sure that the rivet pins 1 are in the correct position at the swivel plate 4.
3. Remove the fibers from the web funnel.

Result The check of the installation status of the web funnel is done.

10.4.10.13 Replacing the Web Funnel

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

⚠ **CAUTION**

Falling loading arm!

Risk of crushing the hands

▶ Do NOT put the hands below the loading arm when the loading arm becomes lowered.

Removing the Web Funnel

1. Open the drafting system hood.
2. Lift the unlocked loading arm.
3. Turn the holder 1.

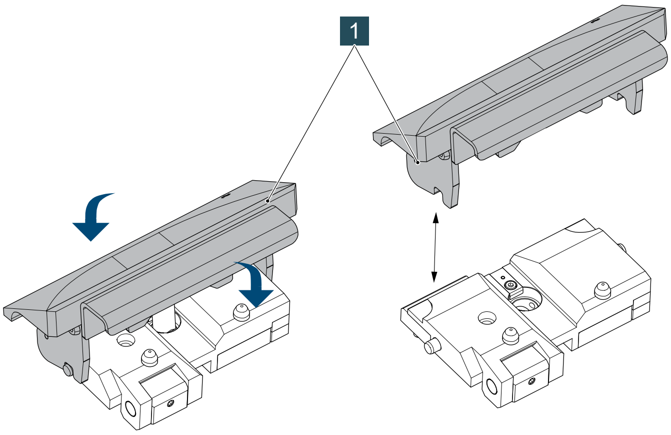


Figure 652: Web nozzle

4. Remove the web nozzle.
5. Remove the screws 2.

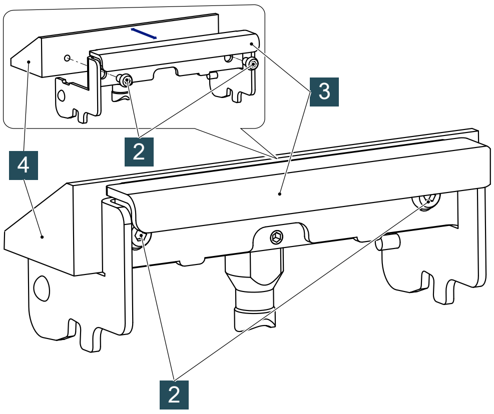


Figure 653: Web funnel

6. Remove the web funnel 4 from the holder 3.

   ⇨ The web funnel is removed.

Installing the Web Funnel

1. Install the web funnel 4 on the holder 3 with the screws 2.
2. Install the web funnel 4 with the holder 3 onto the swivel plate.
3. Turn the holder 3 rearward.
4. **CAUTION! Falling loading arm! Risk of crushing the hands.** Move down the loading arm.

5. Do a check of the installation status of web funnel (*refer to ▸ 601*).
6. Close the drafting system hood.

   ⇨ The web funnel is installed.

Result The web funnel is replaced.

10.4.10.14 Replacing the Clearer Lips of the Top Rollers

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Clearer Lips of the Top Rollers

1. Open the drafting system hood.
2. Remove the screw 1 from the holder 2 with the hexagonal key.

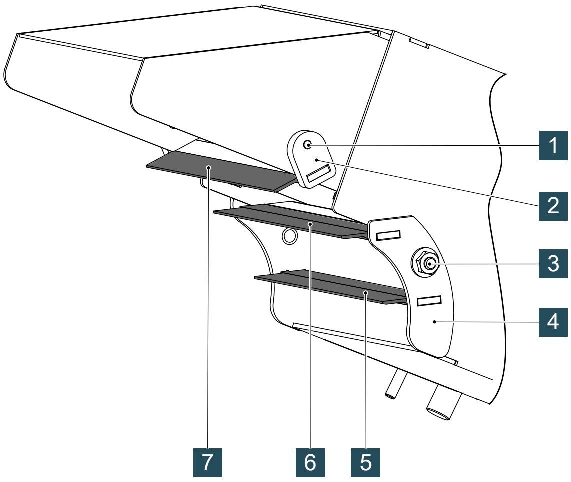


Figure 654: Clearer lips of the top rollers

3. Remove the holder 2.
4. Pull out the clearer lip 7 on the side that is near the removed holder 2.
5. To pull out the clearer lip 7 on the other side, do the steps 2-4 again on the other side.
6. Remove the nut 3 from the retaining plate 4 with the hexagonal socket wrench.
7. Remove the retaining plate 4.
8. Pull out the clearer lips 5 and 6 on the side that is near the removed retaining plate 4.
9. To pull the clearer lips 5 and 6 out of the retaining plate on the other side, do the steps 6 - 8 again on the other side.

   ⇨ The clearer lips of the top rollers are removed.

Installing the Clearer Lips of the Top Rollers

1. Put the clearer lips 5 and 6 into the slots of the retaining plate 4 on the 2 sides.
2. Install the nut 3 on the retaining plate 4 with the hexagonal socket wrench.
3. Put the clearer lip 7 into the slots of the holders 2 on the 2 sides.
4. Install the screws 1 on the holders 2 on the 2 sides with the hexagonal key.
5. Set the clearer lips 5, 6, and 7 of the top rollers.

   ⇨ The clearer lips of the top rollers are installed.

Result The clearer lips for the top rollers are replaced.

10.4.10.15 Replacing the Clearer Lips of the Drafting System Cylinder

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

⚠ **CAUTION**

Falling loading arm!

Risk of crushing the hands

▶ Do NOT put the hands below the loading arm when the loading arm becomes lowered.

Removing the Clearer Lips of the Drafting System Cylinder

1. Open the drafting system hood.
2. Lift the unlocked loading arm.
3. Turn the holder 1 with the web funnel.

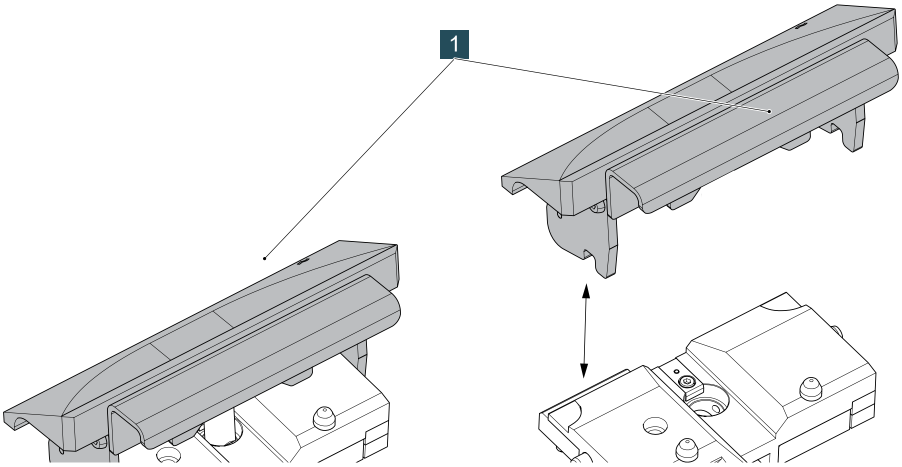


Figure 655: Web nozzle

4. Remove the holder 1.

5. Lift the sliver deflection bars.
6. Remove the sliver deflection bars.
7. Remove the screws 2.

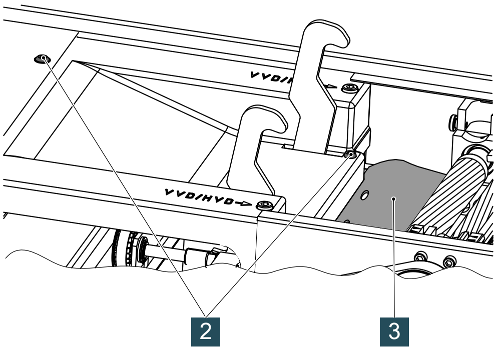


Figure 656: Cover at the feed roller

8. Remove the cover 3 from the feed roller.
9. Lift the clearer lip 4 and remove the clearer lip from the slots of the holder.

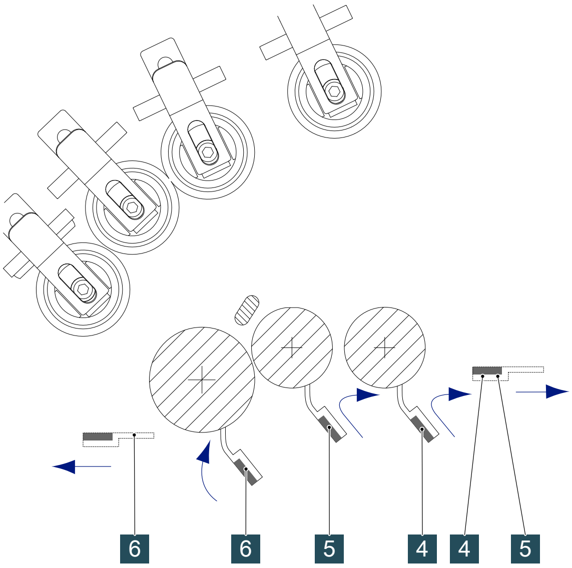


Figure 657: Clearer lips of the drafting system cylinder

10. Lift the clearer lip 5 and remove the clearer lip from the slots of the holder.
11. Lift the clearer lip 6 and remove the clearer lip from the slots of the holder.

   ⇨ The clearer lips of the drafting system cylinders are removed.

Installing the Clearer Lips of the Drafting System Cylinders

1. Put the clearer lip 4 into the slots of the holder.

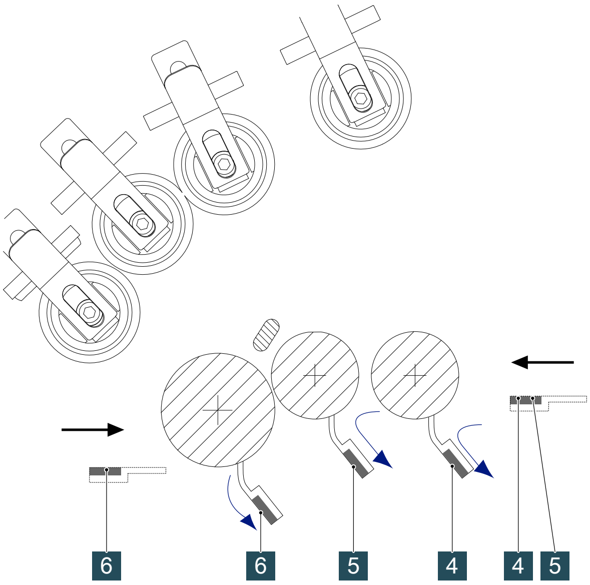


Figure 658: Clearer lips of the drafting system cylinder

2. Put the clearer lip 5 into the slots of the holder.
3. Put the clearer lip 6 into the slots of the holder.
4. Install the cover 3 on the feed roller.
5. Install the screws 2.
6. Install the sliver guide.
7. Install the web funnel.
8. **CAUTION! Falling loading arm! Risk of crushing the hands.** Move down the loading arm.
9. Close the drafting system hood.

   ⇨ The clearer lips of the drafting system cylinders are installed.

Result The clearer lips of the drafting system cylinders are replaced.

10.4.10.16 Doing the Grinding of the Top Rollers

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Remove the top rollers 1, 2, 3, and 4.

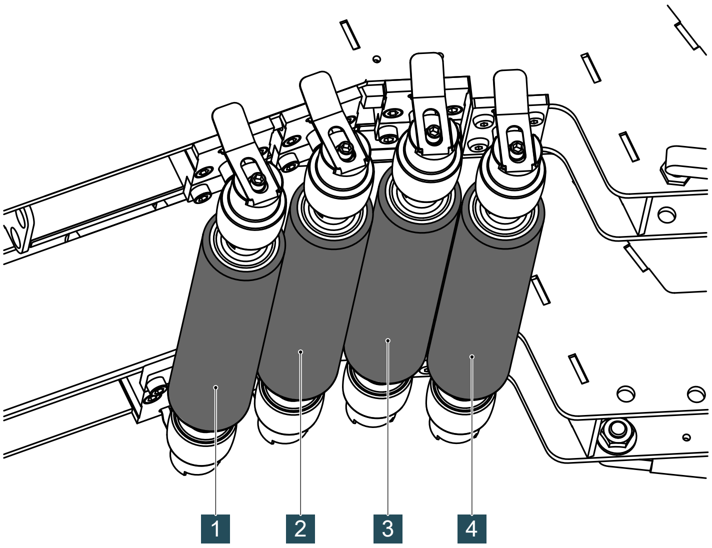


Figure 659: Top rollers

2. Remove the top roller bearings.
3. Make sure that the diameters of the cold top rollers 1, 2, 3, and 4 are ≥36 mm.
4. If the diameters of the cold top rollers 1, 2, 3, and 4 are ≥36 mm, do the steps 5 - 13.
5. Do the grinding of the top rollers with a decreased feed rate of the grinding disk.
6. Make sure that the total contact time with the grinding disk in each grinding cycle is approximately 10 s.
7. Do the fine grinding as the last grinding step.
8. Do a UV chemical treatment on the top roller cots.

   ⇨ The top roller surface is smooth.
9. Do a check of the top roller cots.
10. Install the top roller bearings (*refer to* ▸ *598*).
11. Install the top rollers 1, 2, 3, and 4.
12. Do a check of the overlap stop motion on the feed roller and the middle roller (*refer to* ▸ *426*).
13. Set the overlap stop motion on the feed roller and the middle roller (*refer to* ▸ *426*).
14. Do a check of the overlap stop motion on the delivery roller (*refer to* ▸ *427*).
15. Set the overlap stop motion on the delivery roller (*refer to* ▸ *427*).

Result The grinding of the top rollers is done.

10.4.10.17 Replacing the Top Roller Cots

Prerequisites Make sure that the criteria are obeyed:

- ✓ The top roller is removed from the machine.
- ✓ 1 hydraulic cylinder is to be used.
- ✓ 1 new top roller cot is to be used.
- ✓ The press on/off device is to be used.

Tool	Tool Name	Function Description
	Press on/off device	The press on/off device is to be used to remove the expired top roller cot from the top roller or to install the new top roller cot to the top roller.

1. Remove the 2 top roller bearings from the top roller.
2. Put the guide pin 5 into the holder 6 at the hydraulic cylinder 7.

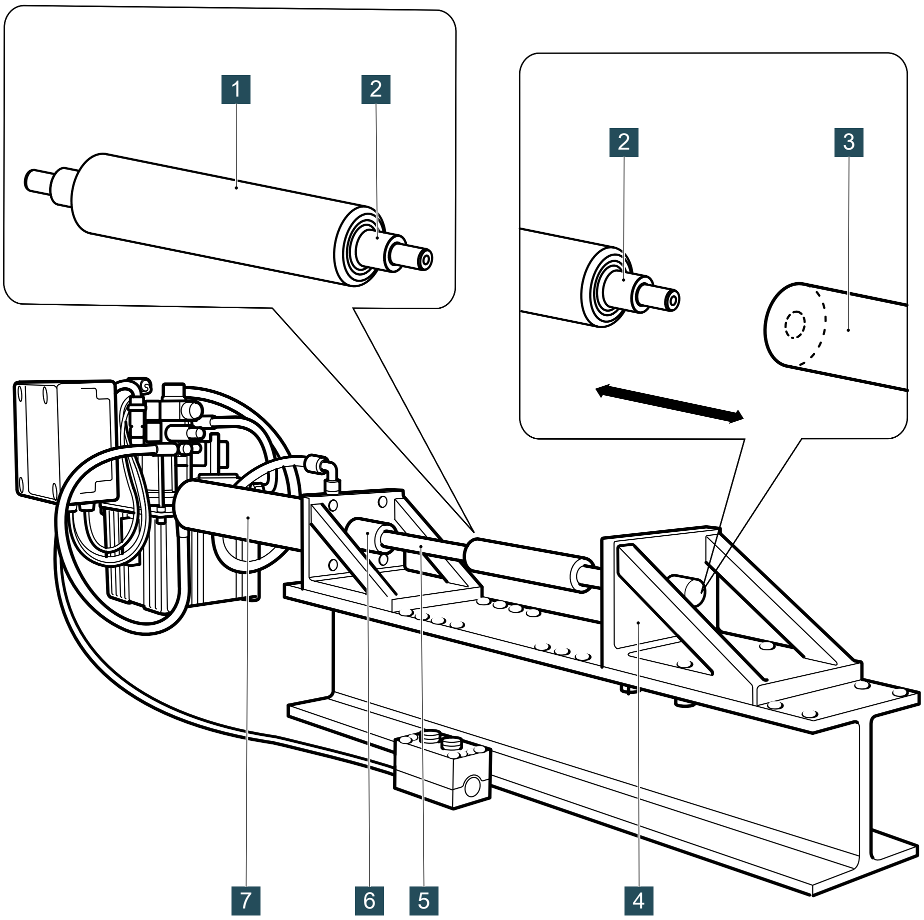


Figure 660: Top roller cots (removal)

3. Move the top roller body 2 through the plate 4 with an auxiliary pin 3.

4. Install the press on/off device 9 between the top roller body 2 and the hydraulic cylinder 7.

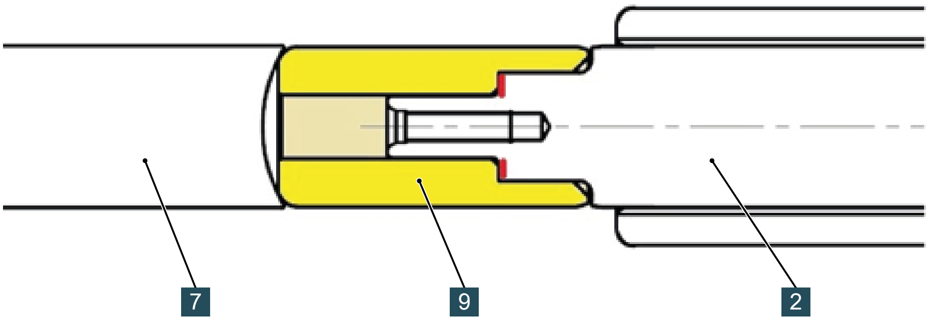


Figure 661: Press on/off device with the top roller cot

5. To push the top roller body 2 through the plate 4, push the hydraulic cylinder 7.

   ⇨ The top roller cot 1 is removed from the top roller body 2.

6. Pull the hydraulic cylinder 7.
7. Remove the top roller cot 1 from the guide pin 5.
8. Put the top roller body 2 onto the holder 6 at the hydraulic cylinder 7.

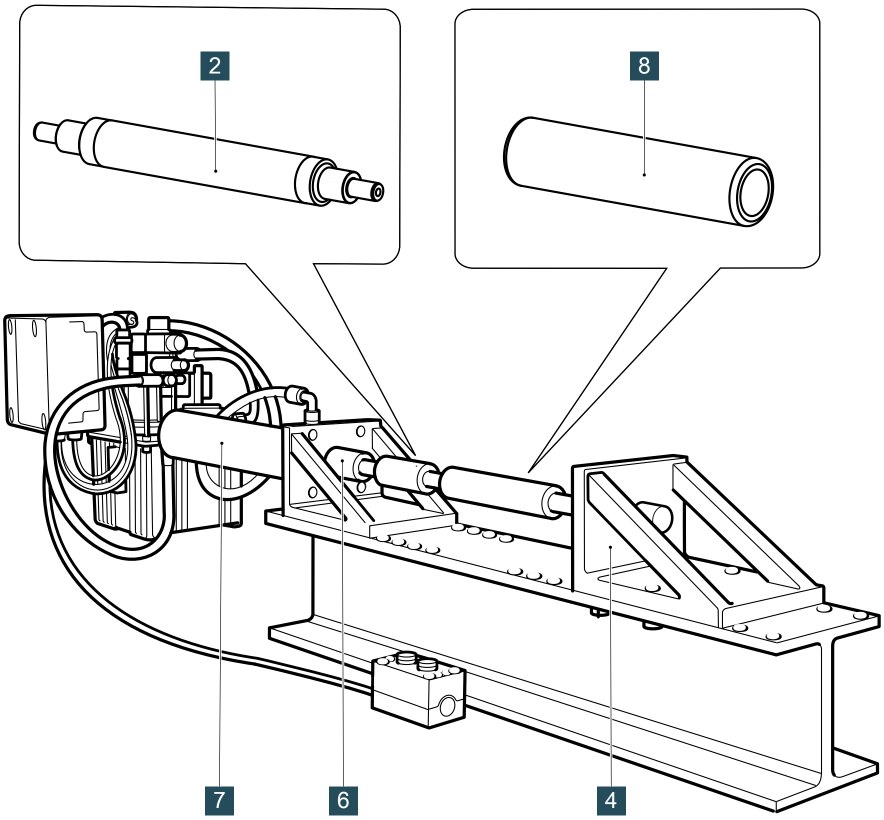


Figure 662: Top roller cots (installation)

9. Push the guide pin 5 through the plate 4.
10. Put the new top roller cot 8 onto the guide pin 5.
11. To apply the force to the top roller cot 8 correctly, put the press on/off device 9 between the top roller body 2 and the hydraulic cylinder 7.
12. Push the hydraulic cylinder 7 until the top roller cot is correctly on the top roller body 2.
13. Pull the hydraulic cylinder 7.
14. Remove the top roller.
15. Do the grinding of the top roller cots after the top roller cots are on the roller body. *Grinding Method of the Top Rollers ▸ 610*

Result The top roller cots are replaced.

10.4.10.18 Grinding Method of the Top Rollers

The diameter of the top rollers 1, 2, 3, and 4 is between 36 mm and 38 mm.

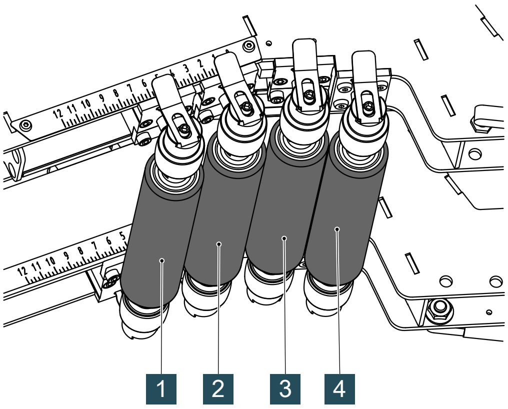


Figure 663: Top rollers (check)

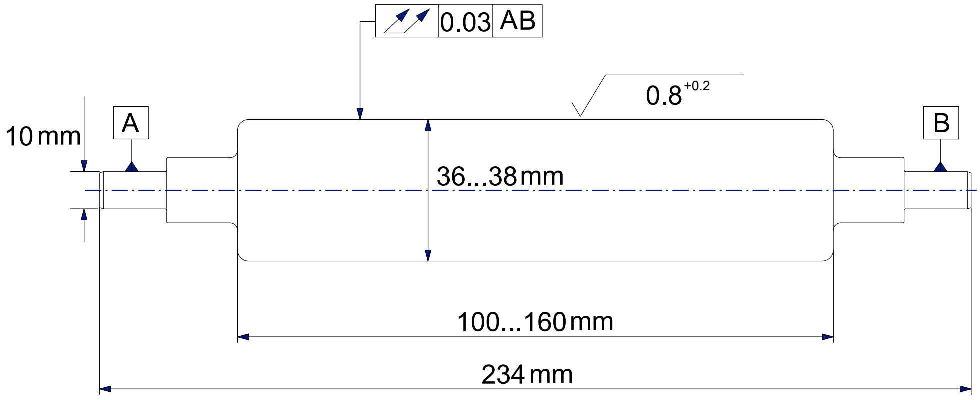


Figure 664: Top roller dimensions

Guide Values for Grinding the Top-Roller Cots

Total contact time with the grinding disk for each grinding cycle	≈ 10 s
Grinding depth for each grinding cycle	≈ 0.2 mm
Grinding depth for each grinding cycle for soft surfaces	≈ 0.3 mm
Grinding tolerance for the top-roller cot between the journals A and B in the correct operation	< 0.03 mm
Grinding tolerance if the top roller cots are aligned	< 0.08 mm
Grinding disk diameter	200 – 500 mm
Grinding disk width	25 – 45 mm
Grain dimension, ceramic-bound, hardness is soft to medium-hard	45 – 80 µm
Porosity of the grinding stone	14
Circumferential speed of the grinding disk, dry	1 800 – 2 000 m/min
Head stock speed	300 – 500 rpm
Oscillating feed	300 – 400 mm/min

If the condition of the top roller cots is bad, more material is to be removed.

The contact duration is the time length that the top-roller cot is in contact with the grinding disk surface.

The grinding disk material gives the contact duration with the grinding disk.

The points that follow are to be obeyed:

- The grinding is to be done until all damage on the surface are removed. Then 1 more grinding cycle is to be done.
- The cot manufacturer specifications are to be obeyed for the grinding procedure.
- The grinding of the top-roller cots of soft top rollers is to be done before the grinding of the top-roller cots of the hard top rollers.
- The grinding disk is to be cleaned at regular intervals. The sharpening of the grinding disk is to be done with a diamond at regular intervals.
- The grinding of the top-roller cots is to be done again after approximately each 500 operating hours.

Roughness Depth Measurement

The influencing factors for the roughness of the surfaces of the top-roller cots are as follows:

- Hardness of the top-roller cots
- Removed material quantity of the top-roller cots
- Grind duration
- Condition of the grinding machine
- Type and hardness of the rubber

The roughness of the cold surface of the top-roller cot must be between 0.8 and 1.0 µm

The user must measure the roughness of the surface of the top-roller cot after the temperature of the top-roller cots decreased to room temperature.

The roughness depth measurement is to be done with a calibrated measuring device at 3 different points.

10.4.11 Sliver Draw-Off

This section contains the information about how to do the repair work in the area of the sliver draw-off.

10.4.11.1 Replacing the Belt of the Delivery Disks

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

⚠ **CAUTION**

Falling loading arm!

Risk of crushing the hands

▶ Do NOT put the hands below the loading arm when the loading arm becomes lowered.

Removing the Belt of the Delivery Disks

1. Open the drafting system hood.
2. Open the cover of the main draft belt.
3. Lift the unlocked loading arm.
4. To release the load from the delivery disks 1, turn the locking lever 2 counterclockwise.

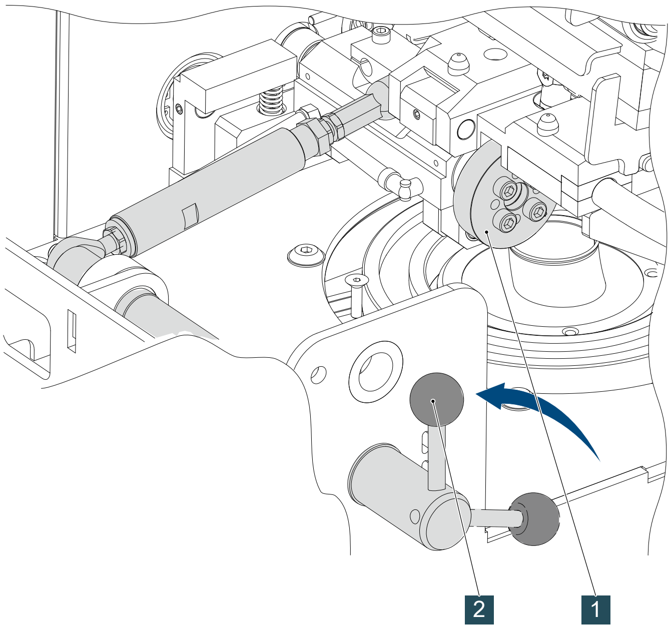


Figure 665: Locking lever for the delivery disks

5. Remove the cotton from the machine.
6. Remove the screws 4 from the cover 3.

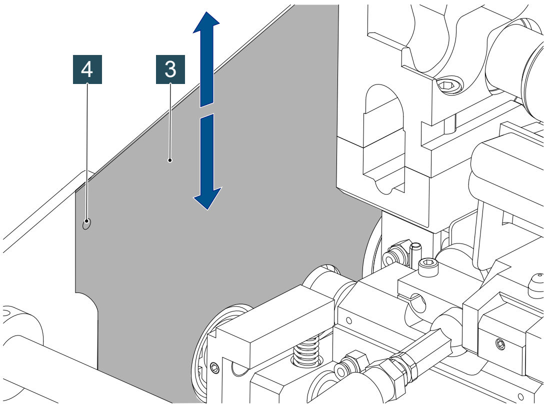


Figure 666: Cover of the delivery disks

7. Remove the cover 3.
8. Remove the belt from the pulley at the position W3 (*refer to ▸ 593*).
9. Loosen the screw 8.

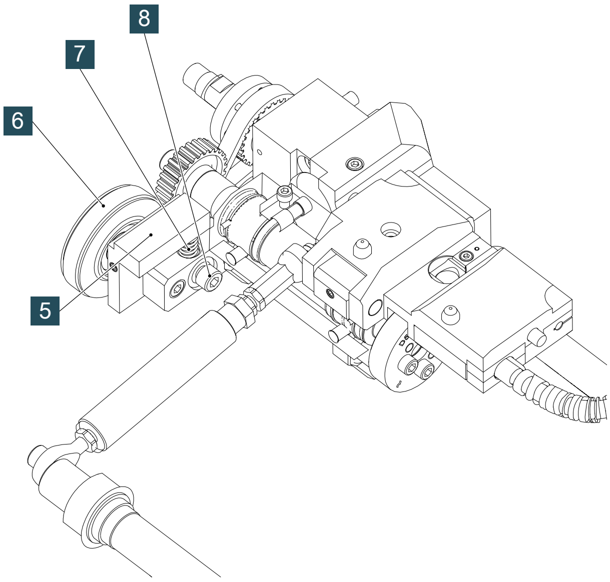


Figure 667: Transmission of the delivery disk

10. Push down the belt tensioner 5 that is above the compression spring 7 carefully.
11. Remove the belt 6.

    ⇨ The belt of the delivery disks is removed.

Installing the Belt of the Delivery Disks

1. Push down the belt tensioner 5 that is above the compression spring 7 carefully.
2. Put the belt 6 onto the pulleys.
3. To move the belt 6 through the drive fully, turn the calender shaft manually.

    ⇨ The teeth of the belt 6 are fully aligned with the teeth of the pulleys.
4. Install the screw 8.
5. Install the cover 3 with the screws 4.
6. Install the belt at the position W3.
7. **CAUTION! Falling loading arm! Risk of crushing the hands.** Move down the loading arm.
8. Do a check of the delivery disk voltage.

    ⇨ The belt of the delivery disks is installed.

Result The belt of the delivery disks is replaced.

10.4.11.2 Replacing the Delivery Disks

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ 2 delivery disks with the mark D54.1 TC are to be used.
- ✓ A multi-purpose lubricating paste is to be used.

CAUTION

Falling loading arm!

Risk of crushing the hands

▶ Do NOT put the hands below the loading arm when the loading arm becomes lowered.

Removing the Delivery Disks

1. Open the drafting system hood.
2. Lift the unlocked loading arm.
3. To release the load from the delivery disks, turn the locking lever 1 counterclockwise.

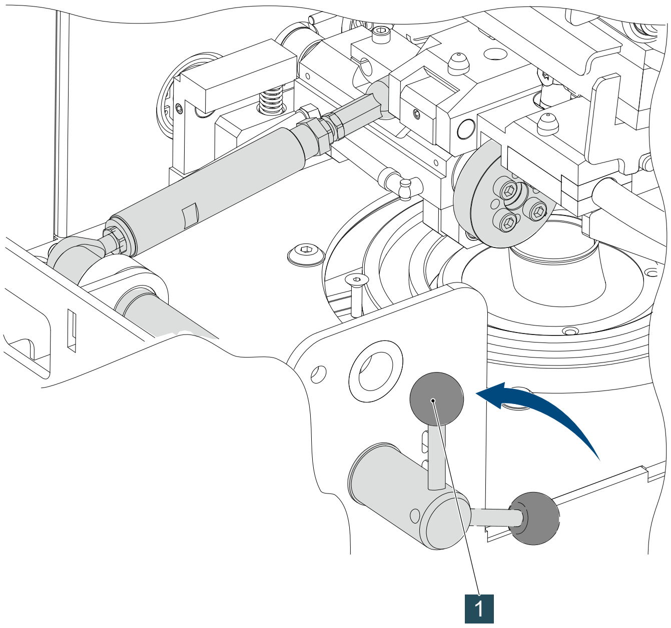


Figure 668: Delivery disk

4. Remove the cotton from the machine.
5. Turn the web funnel with the holder 3.

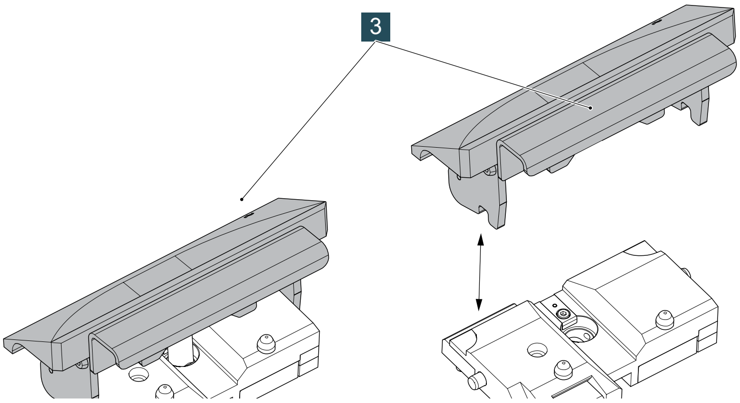


Figure 669: Web funnel

6. Remove the web nozzle.
7. Turn the swivel plate 10.

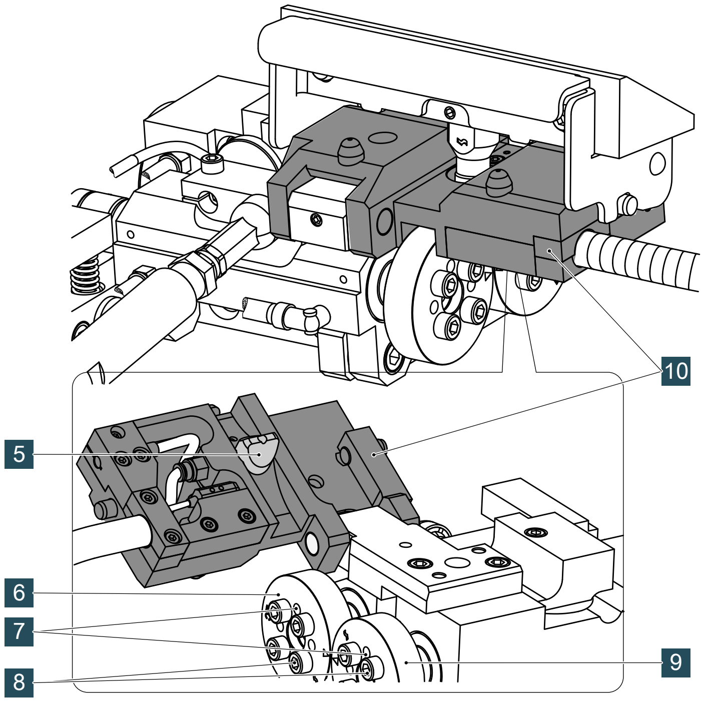


Figure 670: Sliver funnel

8. Remove the sliver funnel 5 from the swivel plate 9 carefully.
9. Hold the delivery disk 6 with the hexagonal key.
10. Remove the screws 8 from the delivery disk 6.
11. Put 1 removed screw 8 into the threaded hole 7 at the delivery disk 6.
12. Put 1 removed screw 8 into an opposite threaded hole 7.
13. Pull out the delivery disk 6 with the 2 screws 8.

   ⇨ The delivery disk 6 is pulled out of the calender shaft.

14. Remove the delivery disk 9 in the same procedure as given in the steps 8 - 12.

    ⇨ The delivery disks are removed.

Installing the Delivery Disks

1. Put the 2 delivery disks 6 and 9 onto the shaft vertically.

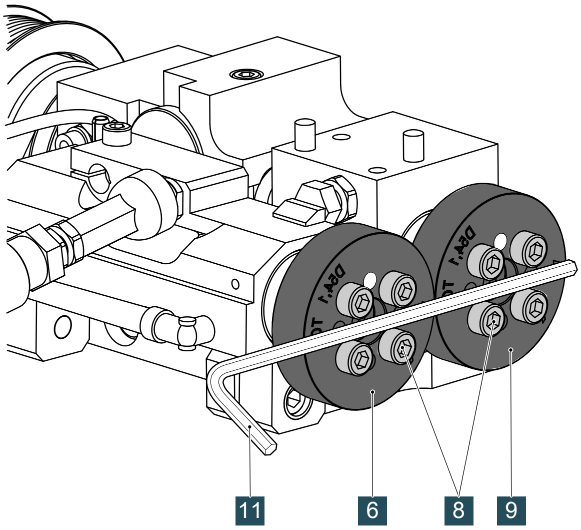


Figure 671: Delivery disks

2. Apply the multi-purpose lubricating paste to the shaft surface where the delivery disk 6 and the delivery disk 9 touch.
3. Apply the multi-purpose lubricating paste to the surface of the delivery disk 6 and the delivery disk 9 where the screws touch.
4. Put the screws 8 into the delivery disk 6 but do not tighten the screws.
5. Hold the delivery disk 6 with the hexagonal key 11 as shown on the figure.
6. Tighten 1 of the screws 8 with the torque wrench with a tightening torque of14.4 Nm.
7. Tighten the opposite screw of the tightened screw with the torque wrench with a tightening torque of 14.4 Nm.
8. Tighten the other screws 8 in the delivery disk 6 in the same procedure that is given in the steps 6 and 7.
9. Tighten the delivery disk 9 in the same procedure that is given in the steps 4 - 8.
10. Calibrate the delivery disks 6 and 9.

    ⇨ The delivery disks are installed.

11. To apply load to the delivery disks, turn the locking lever 1 clockwise.

12. **CAUTION! Falling loading arm! Risk of crushing the hands.** Move down the loading arm.
13. Close the drafting system hood.
    ⇨ The delivery disks are installed.

Result The delivery disks are replaced.

10.4.12 Coiler

This section contains the information about how to repair the coiler.

10.4.12.1 Removing the Coiler

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

⚠ **CAUTION**

Falling coiler!

Danger of injury if the coiler falls

▶ 2 personnel are necessary to hold the coiler.

1. Put a not fully filled can below the coiler.
2. Open the cover of the break draft belt.
3. Open the unlocked loading arm.
4. Remove 2 diagonal screws 3 from the tension plate 2.

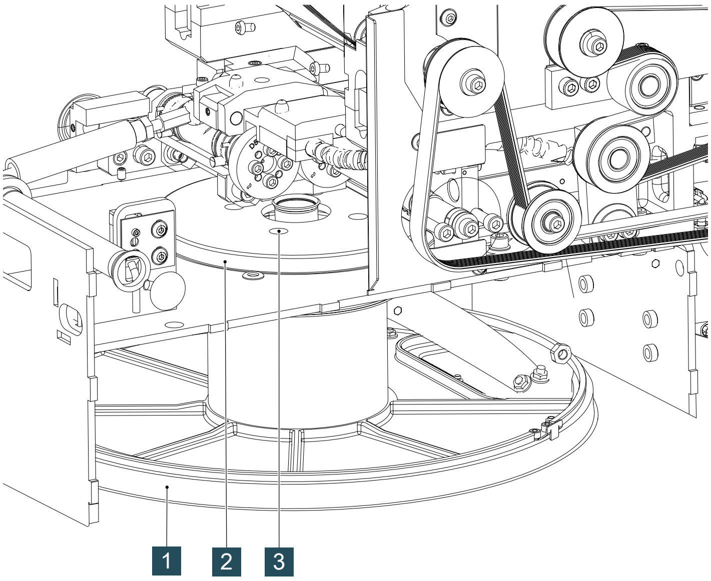


Figure 672: Coiler

5. **CAUTION! Falling coiler! Danger of injury if the coiler falls.** Remove the other 2 diagonal screws 3 from the tension plate 2.
6. Turn the coiler 1 and push down the coiler until the coiler falls into the can that is below the coiler.

Result The coiler is removed.

10.4.12.2 Installing the Coiler

The full coiler is necessary to be replaced when the sliver duct diameter is to be changed.

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

⚠ **CAUTION**

Falling coiler!

Danger of injury if the coiler falls

▶ 2 personnel are necessary to hold the coiler.

⚠ **CAUTION**

Falling loading arm!

Risk of crushing the hands

▶ Do NOT put the hands below the loading arm when the loading arm becomes lowered.

1. Open the cover of the break draft belt.
2. Lift the unlocked loading arm.
3. **CAUTION! Falling coiler! Danger of injury if the coiler falls.** Hold the coiler 1 against the tension plate 2.

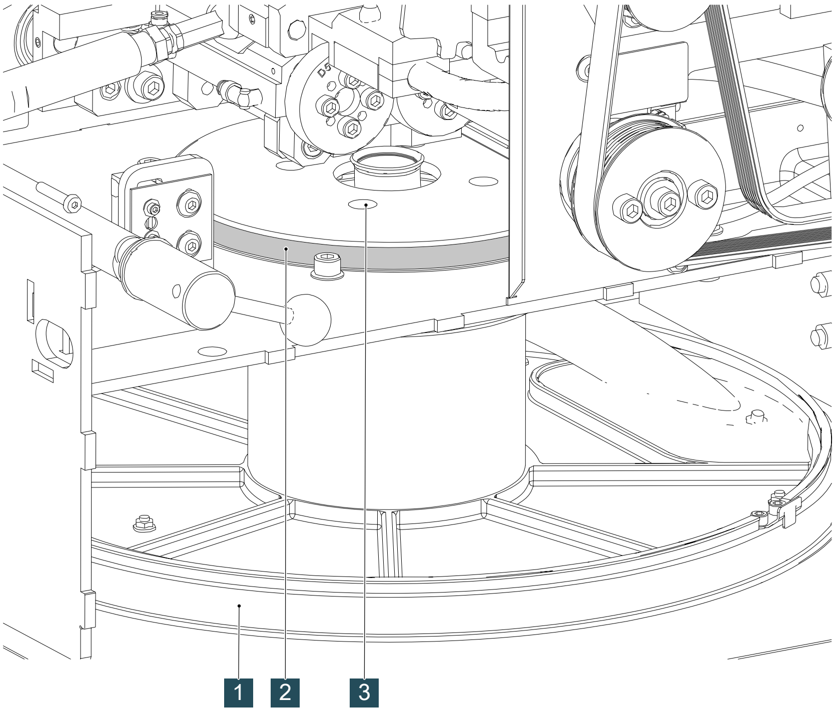


Figure 673: Coiler

4. Tighten the 2 diagonal screws 3.
5. Tighten the other 2 diagonal screws 3.
6. **CAUTION! Falling loading arm! Risk of crushing the hands.** Move down the loading arm.
7. Close the cover of the break draft belt.

Result The coiler is installed.

10.4.12.3 Replacing the Belt at the Position W5

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Belt at the Position W5

1. Open the drafting system hood.
2. Open the cover of the break draft belt.
3. Loosen the screws 2.

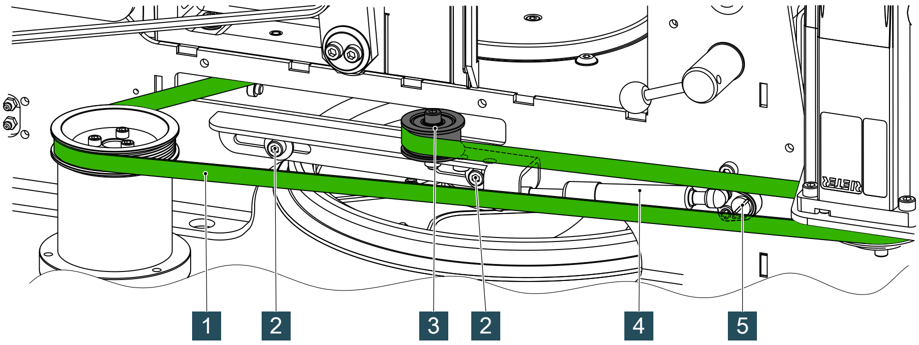


Figure 674: Belt at the coiler

4. Turn the eccentric 5 by 1 revolution.
   - ⇨ The gas pressure spring 4 and the belt tensioner 3 are loosened.
   - ⇨ The load is released from the belt 1.
5. Remove the coiler (*refer to* ▸ *618*).
6. Remove the belt 1.
   - ⇨ The belt at the position W5 is removed.

Installing the Belt at the Position W5

1. Put on the belt 1.
2. Install the coiler (*refer to* ▸ *619*).
3. Turn the eccentric 5 clockwise to the end stop.
4. Tighten the screws 2.
5. If necessary, move the screw 3 on the belt tensioner to the holes 4.
6. Close the cover of the break draft belt.
7. Close the drafting system hood.
   - ⇨ The belt at the position W5 is installed.

Result The belt at the position W5 is replaced.

10.4.12.4 Removing the Spiral Hose

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Loosen the hose clamp 1.

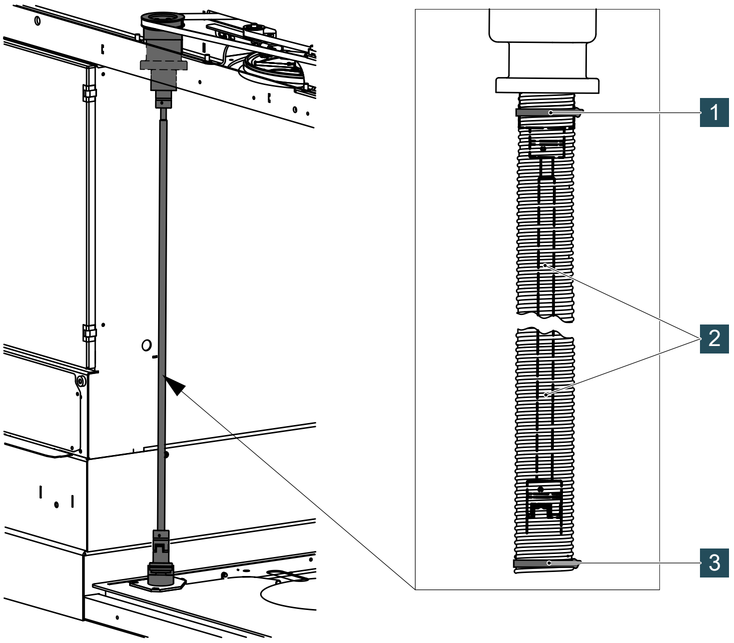


Figure 675: Spiral hose

2. Loosen the hose clamp 3.
3. Move down the spiral hose 2.

Result The spiral hose is removed.

10.4.12.5 Installing the Spiral Hose

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Lift the spiral hose 2.

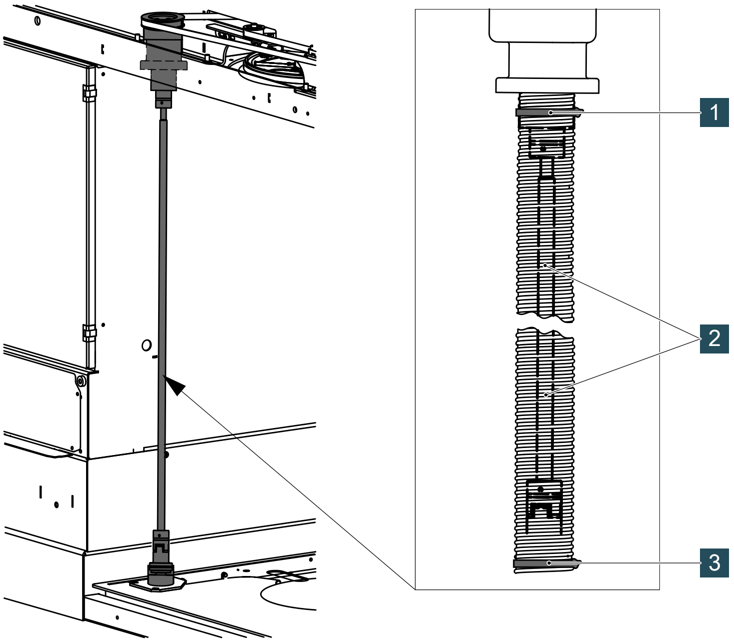


Figure 676: Spiral hose

2. Tighten the spiral hose clamps 1 and 3.

Result The spiral hose is installed.

10.4.12.6 Replacing the Coupling of the Drive Shaft

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ The spiral hose is removed (*refer to* ▸ *621*).

1. Loosen the threaded pin 2.

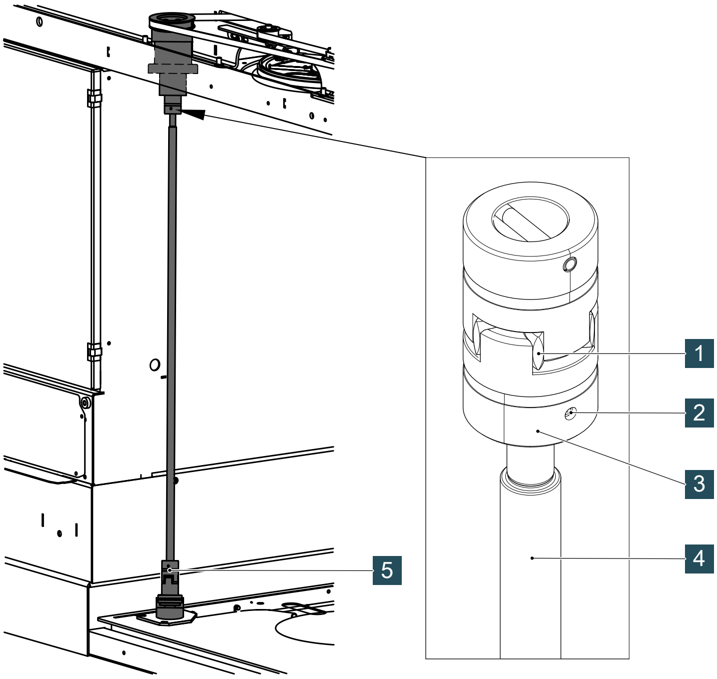


Figure 677: Drive shaft coupling

2. Pull down the coupling half 3 onto the shaft 4.
3. Pull down the gear rim 1 onto the shaft 4.
4. Lift the coupling half of the coupling 5 onto the drive shaft.
5. Lift the gear rim 1 onto the drive shaft 4.
6. Remove the drive shaft 4 with the removed coupling halves and the gear rim.
7. Remove the gear rim and the coupling halves from the drive shaft 4.
8. Put a new gear rim and new coupling halves onto the drive shaft 4.
9. Install the drive shaft 4 to the machine with the coupling halves and the threaded pins.
10. Install the spiral hose with the hose clamp (*refer to ▸ 622*).

Result The coupling of the drive shaft is replaced.

10.4.12.7 Replacing the Side Wall Cover of the Delivery Unit

Removing the Side Wall Cover

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ The drafting system hood is opened.
- ✓ The rear hood of the drafting system is opened.

1. Loosen the screws at the cover 1 of the coiler drive.

2. Remove the cover 1.

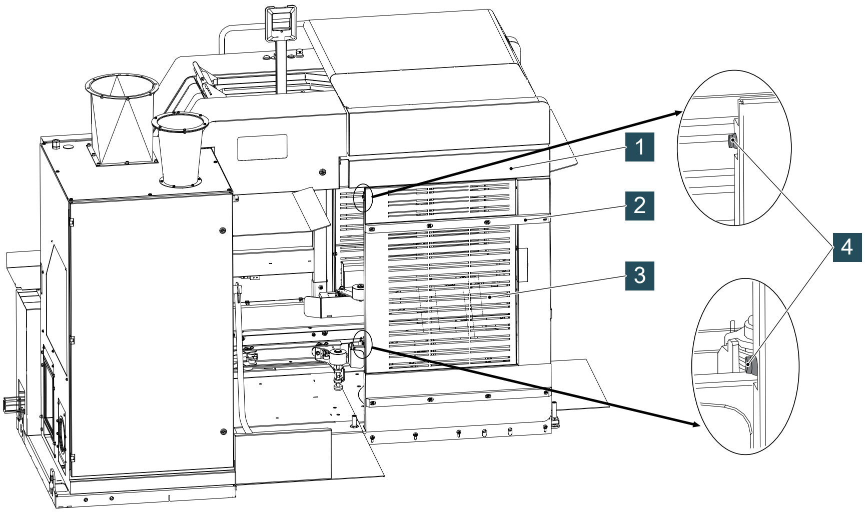


Figure 678: Side wall cover

3. Remove the guard band 2.
4. Lift and remove the side wall cover 3.

   ⇨ The side wall cover of the delivery unit is removed.

Installing the Side Wall Cover

1. Put the side wall cover 3 down onto the screws 4.
2. Install the guard band 2.
3. Install the cover 1 of the coiler drive with the removed screws.

   ⇨ The side wall cover is installed.

Result The side wall cover of the delivery unit is replaced.

10.4.13 Can Changer

This section contains the information about how to repair the can changer.

10.4.13.1 Replacing the Can Changer

This section contains the information about how to remove and install the can changer.

NOTICE

Putting a foot on the can table

Damage of the can table

▶ Do NOT put a foot on the can table in any condition.

Removing the Can Changer

CAUTION

Moving parts

Risk of a hand injury

- ▶ Do NOT put a hand near the pusher unit and the catch levers during a can change.

1. Do a can change manually.
2. **CAUTION! Moving parts. Risk of a hand injury.** To stop the pusher unit 1 at the rearmost position, push the stop button.
3. Set the main switch to the position OFF and padlock the main switch.

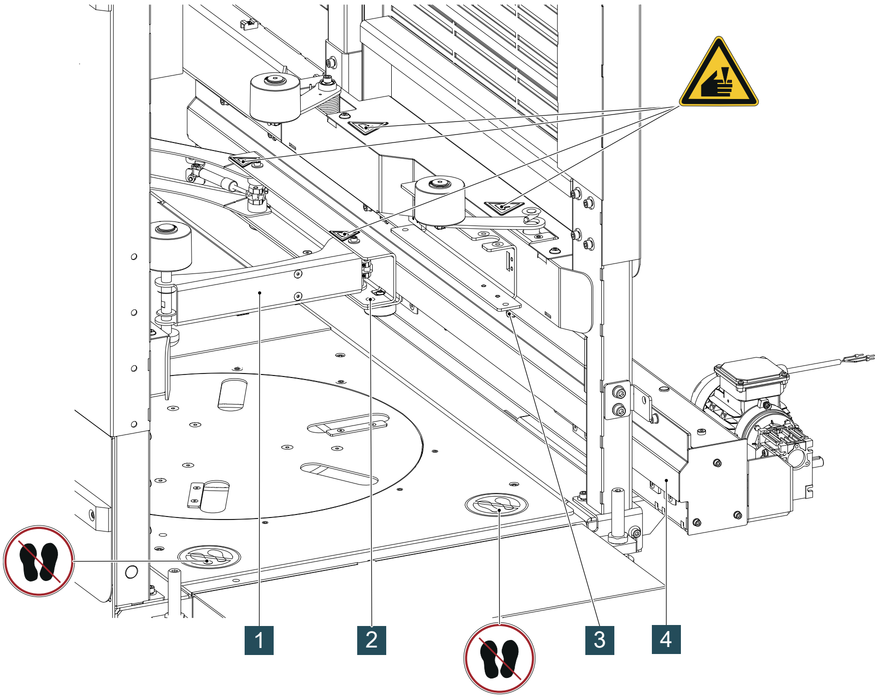


Figure 679: Pusher unit

4. Remove the 3 screws 2 from the pusher unit 1.
5. Remove the pusher unit 1.
6. Remove the 4 screws 3.
7. Remove the can changer 4.

   ⇨ The can changer is removed.

Installing the Can Changer

1. Install the can changer 4 with the 4 screws 3.
2. Install the pusher unit 1 with the 3 screws 2.

3. Unlock the main switch.
4. Set the main switch to the position ON.
   ⇨ The can changer is installed.

Result The can changer is replaced.

10.4.13.2 Replacing the Shaft Holder

This section contains the information about how to remove and install the shaft holder.

Prerequisites Make sure that the criteria are obeyed:

✓ The can changer unit is removed from the machine (*refer to ▸ 625*).
✓ The main switch is set to the position OFF and the main switch is padlocked.

Removing the Shaft Holder

1. Remove the screws 4 from the cover 3.

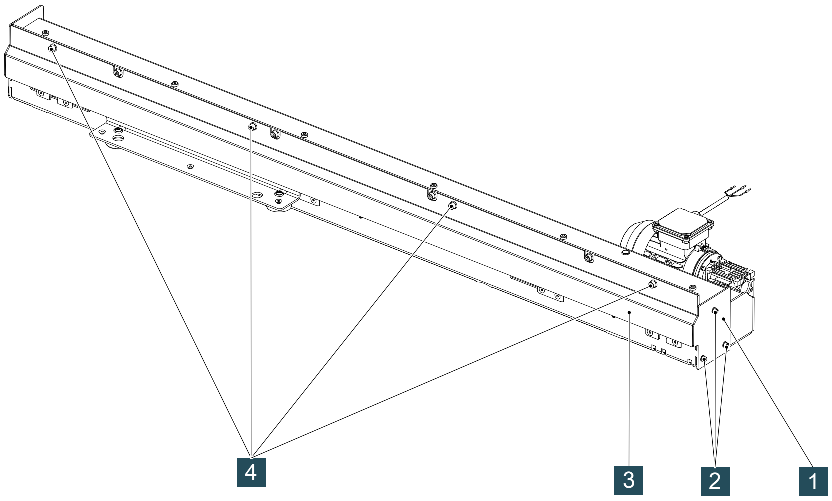


Figure 680: Can changer

2. Remove the cover 3.
3. Remove the screws 2 at the cover 1.
4. Remove the cover 1.
5. Remove the rubber grommet 6.

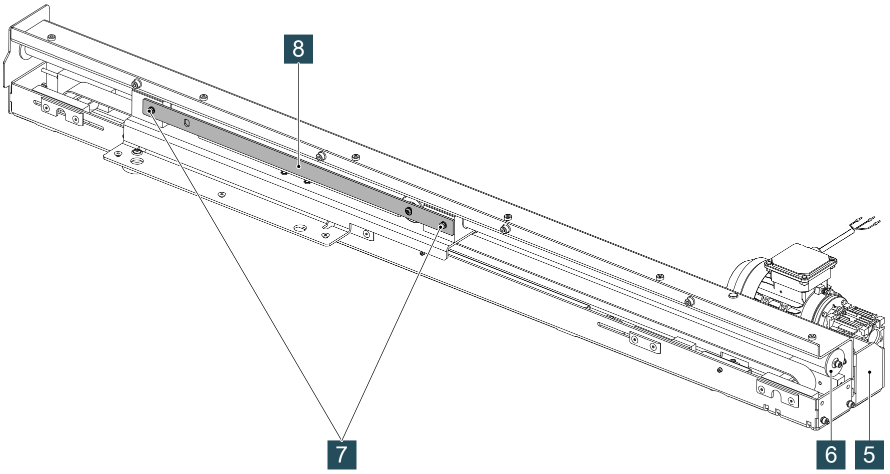


Figure 681: Can changer

6. To remove the motor, remove the screws 12.

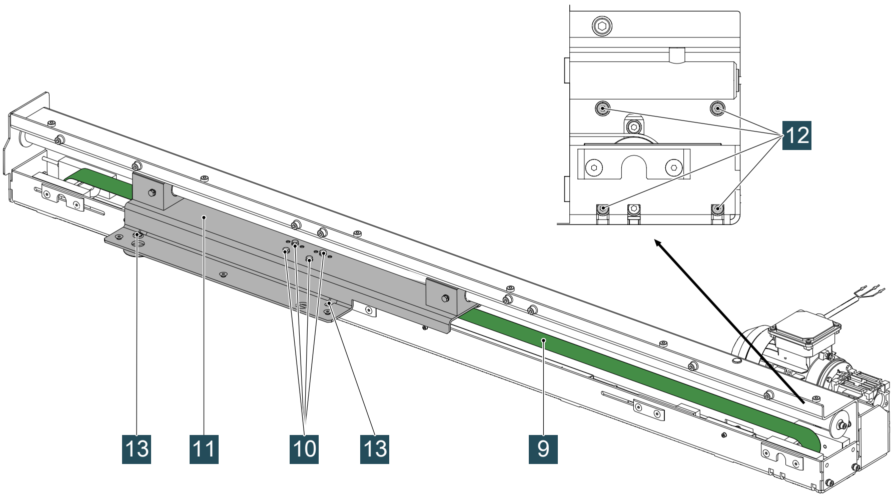


Figure 682: Can changer

7. Remove the screws 7.
8. Remove the plate 8 with the 2 guide rolls.
9. Put marks on the belt 9 where the left edge and the right edge of the shaft holder 11 is.
10. Remove the 4 screws 10 from the shaft holder 11.
11. Push down the belt lightly until the shaft holder 11 can move.
12. Move the shaft holder 11 to the open end of the can changer.
13. Remove the shaft holder 11 from the can changer.

   ⇨ The shaft holder is removed.

Installing the Shaft Holder

Prerequisites Make sure that the criteria are obeyed:

✓ The axial guide of the can changer is clean and free of grease.

1. Put the shaft holder 11 onto the can changer.
2. Install the motor with the 4 removed screws 12.
3. Move the shaft holder 11 to the position between the marks on the belt 9.
4. Install the 4 screws 10.
5. If the shaft holder 11 is not possible to be moved along the axial guide easily, do the steps 6 - 8.
6. Loosen the 2 screws 13.
7. Set the 2 rollers until the shaft holder 11 moves easily along the axial guide.
8. Tighten the 2 screws 13.
9. Install the rubber grommet 6.
10. Install the plate 8 with the screws 7.
11. Install the cover 1 with the screws 2.
12. Install the cover 3 with the screws 4.

   ⇨ The shaft holder is installed.

Result The shaft holder is replaced.

10.4.13.3 Replacing the Bearing Housings at the Guide Unit

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Remove the can changer unit (*refer to* ▸ *625*).
2. Remove the shaft holder from the can changer (*refer to* ▸ *627*).
3. Remove the screws 2 from the bearing housings 1.

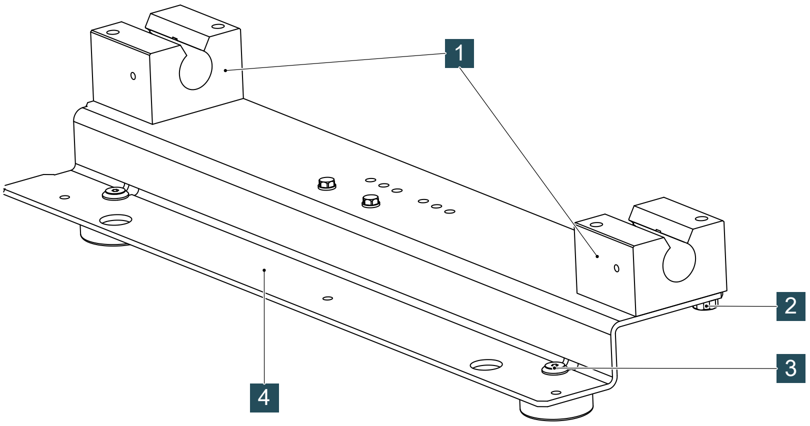


Figure 683: Shaft holder

4. Remove the bearing housings 1 from the holder 4.
5. Lightly tighten the new bearing housing with the screws 2 onto the holder 4.
6. Install the shaft holder to the axial guide of the machine.
7. To align the new bearing housings, loosen the screws 3 on the guide rolls.
8. Align the new bearing housings with the axial guide.
9. Install the screws 2.
10. Install the screws 3.
11. Install the shaft holder on the can changer (*refer to* ▸ *627*).
12. Install the can changer unit (*refer to* ▸ *625*).

Result The bearing housings at the guide unit are replaced.

10.4.13.4 Replacing the Belt of the Can Changer

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Remove the can changer unit (*refer to* ▸ *625*).
2. Remove the shaft holder from the can changer unit (*refer to* ▸ *627*).
3. Loosen the 2 nuts of the 2 screws 1 at the bearing housing 2.

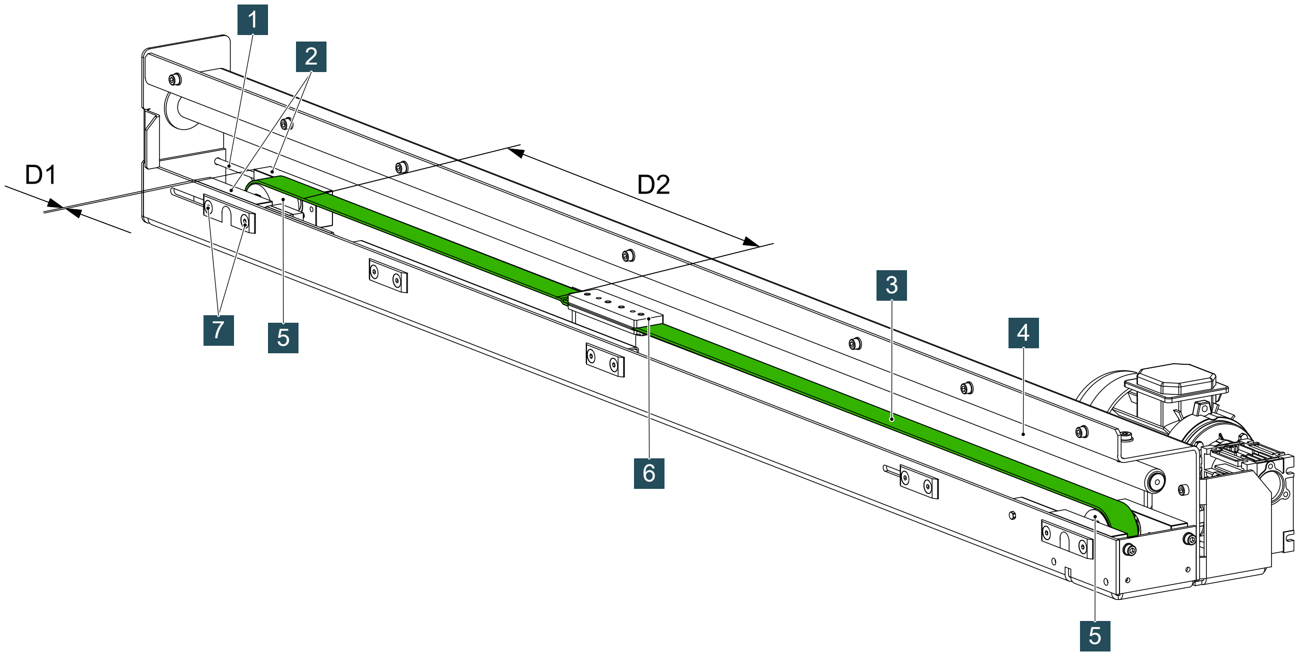


Figure 684: Can changer belt

4. To loosen the 2 sliding blocks, loosen the 4 screws 7 on the 2 bearing housings 2.
5. To remove the screws easily from the connecting block 6, turn the belt 3.

6. Remove the screws from the connecting block 6.
7. Remove the belt 3.
8. Clean the drive unit.
9. If the axial guide, the pulleys, and the roller bearing are worn, replace the axial guide 4, the pulleys 5, and the roller bearing in the bearing housings 2.
10. Put the new belt over the central position of the pulleys 5.
11. Put 1 end of the belt over the other end of the belt.
12. Tighten the belt.
13. Put marks on the belt for the screw positions with the connecting block 6.
14. Remove the part that is too long from the belt.
15. Make holes with a diameter of 6.5 mm into the belt where the mark was put for the screws.
16. Install the screws on the connecting block 6.
17. Set the distance D2 between the left edge of the connecting block 6 and the right edge of the bearing housing 2 to 1 000 mm.
18. Put marks on the belt for the distance D2.
19. Turn the screws 1 in alternative until the distance D2 on the belt is 1 020 mm.
20. Lock the screws 1 with the nuts.
21. Tighten the screws 7.
22. Make sure that the distance D1 between the left edges of the 2 bearing housings 2 is less than or equal to 5 mm.
23. Install the shaft holder (*refer to* ▸ *627*).
24. Install the can changer unit (*refer to* ▸ *625*).

Result The belt of the can changer is replaced.

10.4.14 Can Table

This section contains the information about how to repair the can table.

10.4.14.1 Replacing the Turntable Belt

Removing the Turntable Belt

Prerequisites Make sure that the criteria are obeyed:

- ✓ The machine is at a standstill.
- ✓ The can turntable is removed.

⚠ **WARNING**

Force from the gas spring!

Injury of fingers

- ▶ Move the wrench slowly during the gas spring stretches.

1. Loosen the screws through the hole 2.

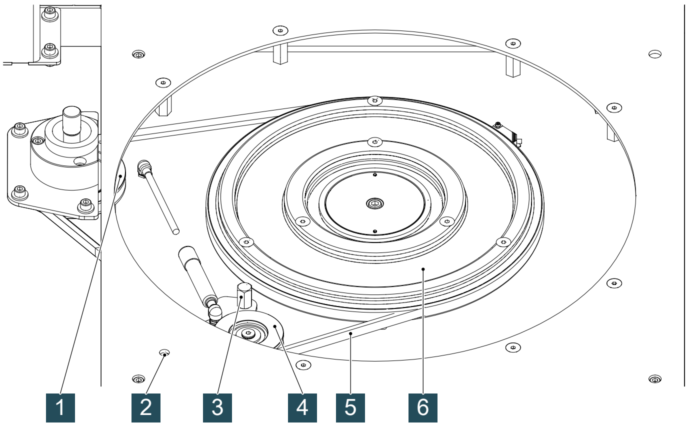


Figure 685: Turntable belt

2. Turn the tension plate counterclockwise through the stud 3 with the wrench.
   ⇨ The tension is released from the turntable belt 5.
3. Remove the turntable belt 5 from the wheel 6 and the pulley 4.
4. **WARNING! Force from the gas spring! Injury of the fingers.** Remove the wrench.
5. Remove the turntable belt 5 from the pulley 1 through the distance between the pulley 1 and the can table.
   ⇨ The turntable belt 5 is removed.

Installing the Turntable Belt

1. Install the turntable belt 5 onto the pulley 1.
2. Install the turntable belt 5 onto the wheel 6.
3. Turn the tension plate counterclockwise through the stud 3 with the wrench.
4. Install the turntable belt 5 onto the pulley 4.
5. Remove the wrench.
6. Tighten the screw through the hole 2.
   ⇨ The turntable belt is installed.

Result The turntable belt is replaced.

10.4.15 ROBOlap

This chapter contains the information about the repair work of ROBOlap.

10.4.15.1 Removing and Installing the Lap Feeding

The lap feeding is easy to be removed or installed to do maintenance work or repair work.

Removing the Lap Feeding

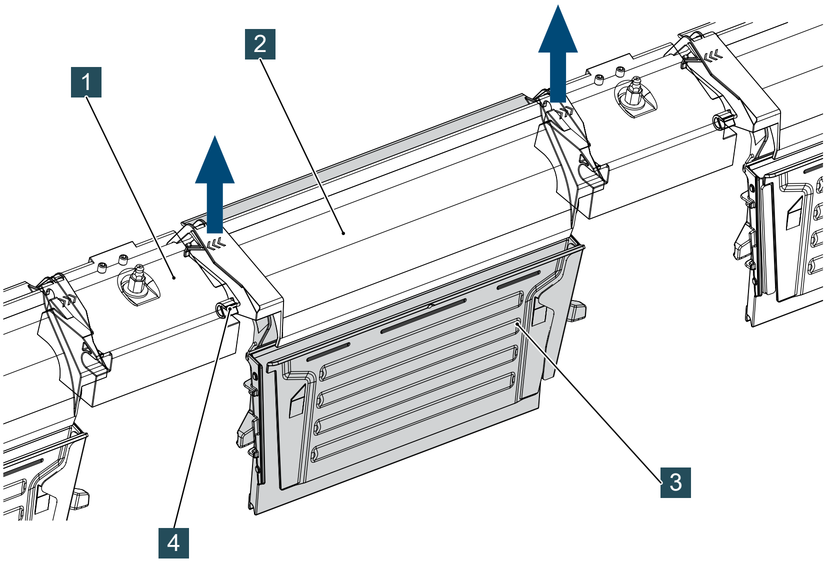


Figure 686: Lap feeding (removal)

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Pull the lid 2 at the arrow position.
2. Remove the lid 2 from the groove 4 of the cover 1.
3. Remove the bottom part 3 of the lap feeding.

   ⇨ The lap feeding is removed.

Installing the Lap Feeding

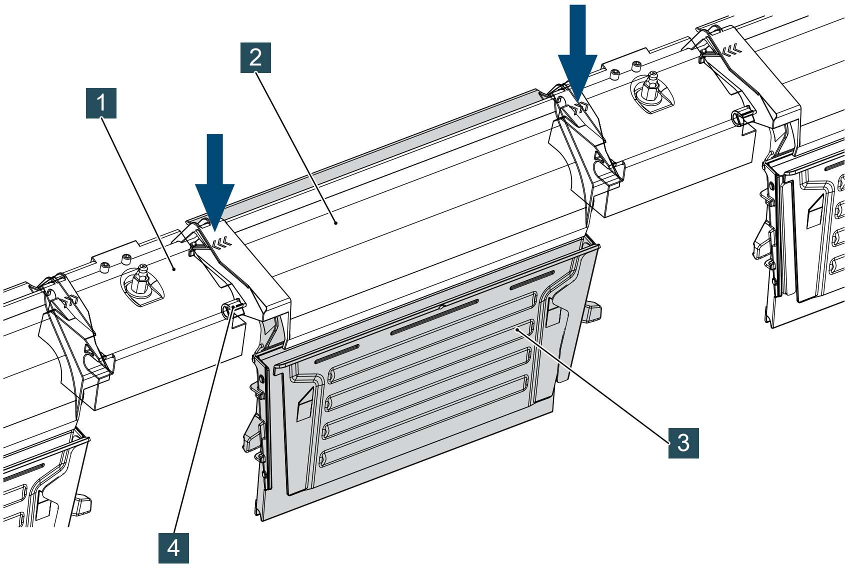


Figure 687: Lap feeding (installation)

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Install the bottom part 3 of the lap feeding.
2. Put the lid 2 at the groove 4 of the cover 1.
3. Push down the lid at the arrow position.

   ⇨ The lid 2 locks into position.

   ⇨ The lap feeding is installed.

10.4.16 Sliver Extraction

This chapter contains the information about the repair work of the sliver extraction.

10.4.16.1 Removing the Sliver Extraction

Prerequisites Make sure that the criteria are obeyed:

✓ The main switch is set to the position OFF and the main switch is padlocked.

1. Close the main valve with the top pusher 10.

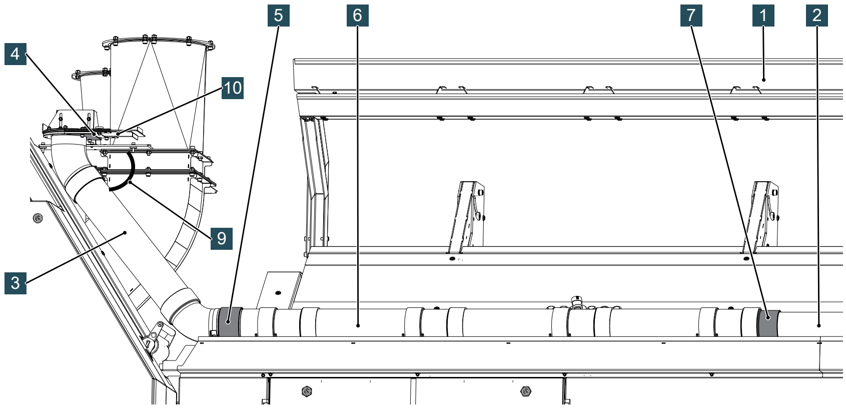


Figure 688: Complete sliver extraction

2. Remove the hose 9 from the crosswise piping 3.
3. Move the reduction piece 7 to the right side of the part 2 of the horizontal piping.
4. Remove the part 2 of the horizontal piping and put it into the holder 1.
5. Move the reduction piece 5 to the left side.
6. Remove the part 6 of the horizontal piping and put it onto the holder 1.
7. Loosen the screw 8 from the supporter.

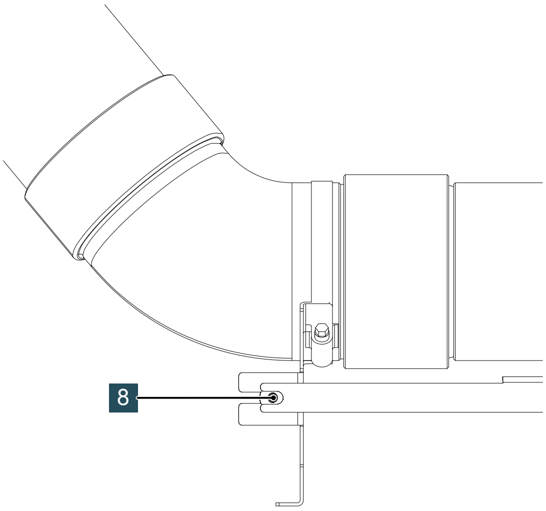


Figure 689: Supporter of crosswise piping

8. Remove the crosswise piping 3 and put it into the holder 1.
9. Tighten the screw 8.
10. Remove the 8 pipe supporters from the table.

Result The sliver extraction is removed from the machine.

10.4.16.2 Installing the Sliver Extraction

The top pusher of the reducer slider 5 is used to open and close the airflow.

The lower pusher of the reducer slider 5 is used to keep the air pressure in the pipe as 700 Mpa. This air pressure of 700 Mpa is to be adjusted to at each machine.

Prerequisites Make sure that the criteria are obeyed:

- ✓ The main switch is set to the position OFF and the main switch is padlocked.
- ✓ 2 pieces of ISO7092 - 6.4 - St - 200HV – Zn washers are to be used.
- ✓ 2 pieces of ISO4762 - M6 x 25 - 8.8 – Zn screws are to be used.

1. Remove the 2 M6 screws and washers at the positions 10.

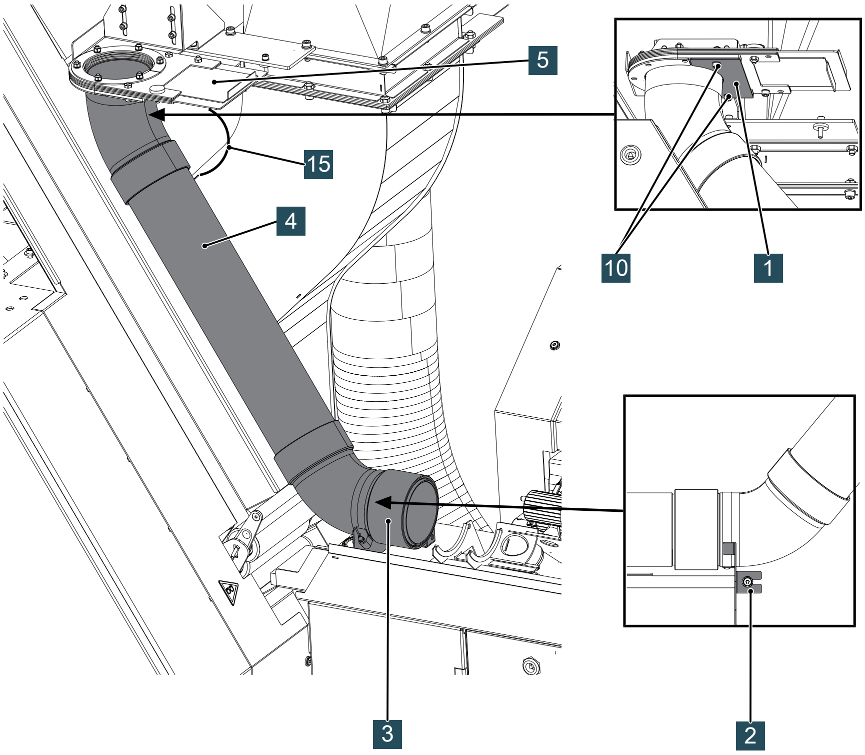


Figure 690: Cross piping

2. Loosen the screw on the front support 2.
3. Install the crosswise piping 4 into the reducer sider 5.
4. Move the front support 2 to make sure that the screw is installed into the open slot of the front support 2.
5. Tighten the screw on the front support 2.
6. Install the clamping element 1 with 2 M6 screws and 2 washers.
7. Install the pusher 3 onto the piping 4.
8. Install the supporter 6 into the slots of angle 7.

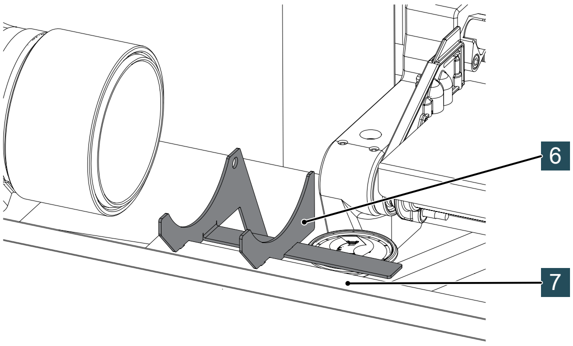


Figure 691: Spporter_1

9. Install the supporter 8.

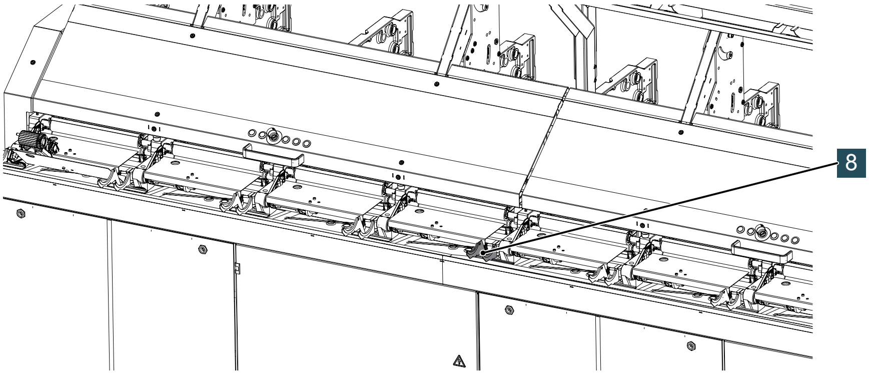


Figure 692: Supporter_2

10. Install the first part 9 of horizontal piping onto the crosswise piping 4.

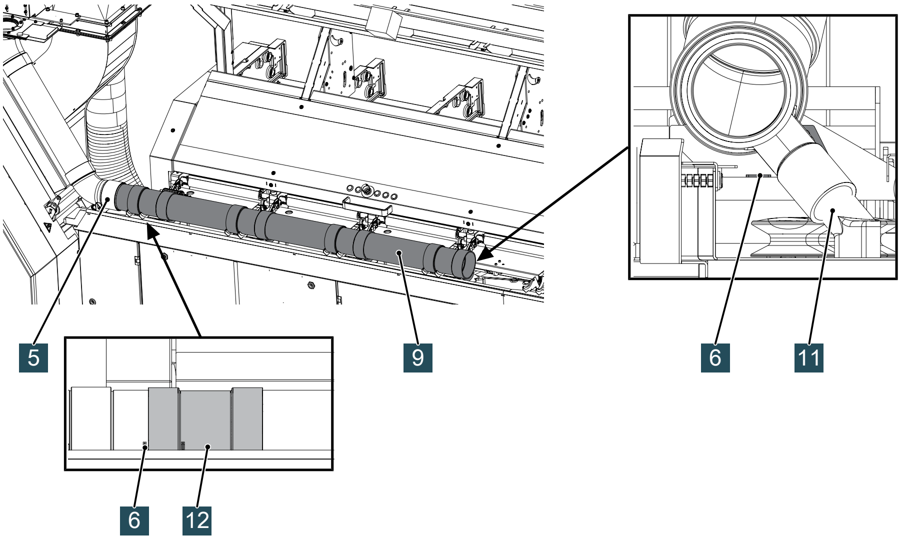


Figure 693: First part of horizontal piping

11. Make sure that the left flanges of 4 pipe pieces 12 are in the center of the 4 supporters 6.
12. Turn the piping 9 to make sure that the 4 suction heads 11 touch the supporters 6.
13. Push the pusher 5 to the right side.
    - ⇨ The piping 9 and the piping 1 are connected correctly.
14. Connect the second part 14 of horizontal piping to the first part 9.

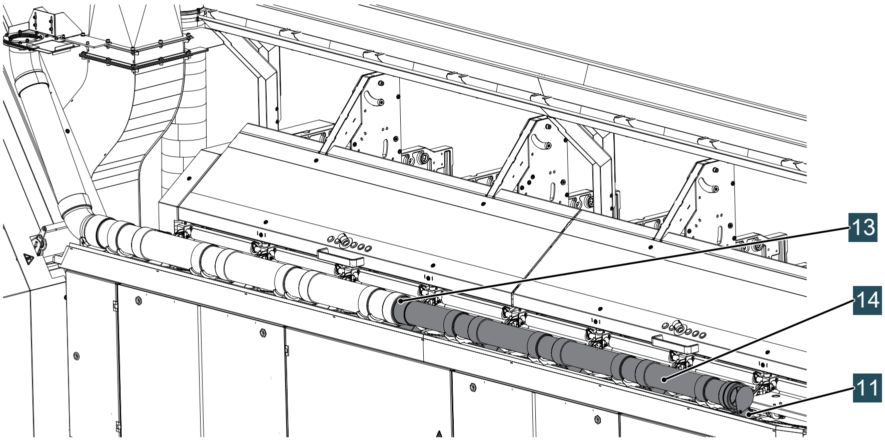


Figure 694: Second part of horizontal piping

15. Examine and make sure that the left flanges of the 4 piping pieces are in the center of the supporters.
16. Turn the 4 suction heads 11 to make the suction heads touch the supporters.
17. Move the reduction piece 13 to the left side.
    - ⇨ The first part 9 of horizontal piping and the second part 14 are connected correctly.
18. To make sure that the bottom edges 16 of the 8 suction heads 11 do not touch the table and the bottom edges 16 are parallel to the table, adjust the suction head.

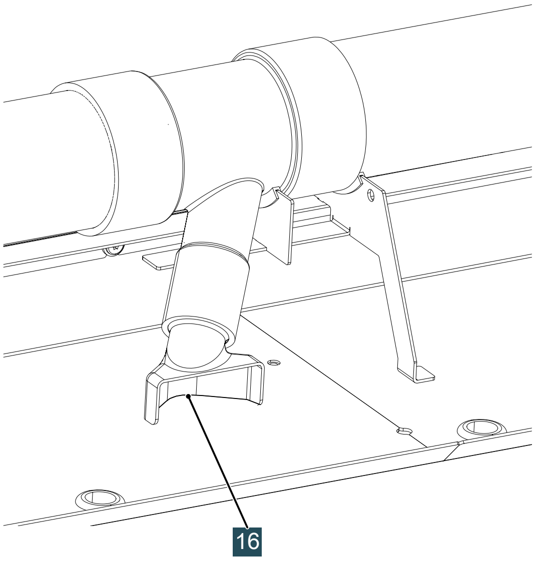


Figure 695: Front view of the suction head

19. Connect the hose 15 to the crosswise piping 4 for the pressure measurement.
20. Open the valve with top pusher of the reducer slider 5.

Result The sliver extraction is installed.

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11 Decommissioning and Storage

This chapter contains information about:

- The personnel
- The temporary decommissioning of the machine
- The final decommissioning of the machine
- The storage of the machine

11.1 Decommissioning Personnel

Only Rieter-approved personnel are permitted to do the decommissioning and storage of the machine.

11.2 Measures for Decommissioning and Storage

Temporary Decommissioning

Temporary decommissioning is decommissioning only for a short time because of a shutdown. The purpose is to set the machine back into operation after the end of the shutdown.

These temporary decommissioning works are to be done:

1. Remove the fiber material from the machine.
2. Remove all operation fluids from the machine. Obey all national regulations for the storage or disposal of all operation fluids.
3. Set the main switch to the position OFF. Padlock the main switch.
4. Disconnect the compressed-air supply.
5. Let the machine temperature go down to the ambient temperature.
6. If available, remove all roller loads.
7. Remove all technology components.
8. Release the tension from the timing belts, the flat belts, or the V-ribbed belts.
9. Clean the machine and all technology components correctly. Prevent corrosion and impurities at the machine and all technology components.

Final Decommissioning

The purpose of a final decommissioning is to prepare the machine:

- For storage for a longer period
- For transport to a different location
- For disposal

This work for the final decommissioning is to be completed:

1. Remove the fiber material from the machine.

2. If available, remove all roller loads.
3. Remove all technology components.
4. Remove all operation fluids from the machine. Obey all national regulations for the storage or the disposal of all operation fluids.
5. Set the main switch to the position OFF. Padlock the main switch.
6. Set the machine at the index 24. Remove the feed rollers from the nipper.
7. Disconnect the compressed-air supply.
8. Disconnect the power supply to the machine.
9. Let the machine temperature go down to the ambient temperature.
10. Release the tension from the timing belts, the flat belts, or the V-ribbed belts.
11. If the machine is prepared for storage, clean the machine and all technology components correctly. Prevent corrosion and impurities at the machine and all technology components.
12. Disassemble the machine into units that stay in a safe condition during transport.
13. Use the original transport locks and the original packaging materials. Obey all transport regulations. *Packaging and Transportation* ▸ *111*

Storage

1. Keep the machine in a clean and dry room. Put the machine and the machine parts on a flat surface. Identify the machine with an identification mark.
2. Do not let unauthorized personnel go into the storage room.

12 Disposal of the Machine

This chapter contains information about the disposal of the machine after the end of its service life.

The machine owner is responsible for the correct disposal of the machine.

The instructions in the chapters that follow are to be obeyed:

- Safety
- Packaging and Transportation
- Decommissioning and Storage

The national regulations for the disposal of the machine and all operation fluids, batteries, and packaging materials are to be obeyed.

Disposal includes:

- Reusability
- Recycling
- Disposal of waste

The materials are to be divided in relation to the material group. The materials are to be given to the correct collection point:

- Steel
- Copper
- Brass
- Rubber
- Electronic waste
- Cast iron
- Glass
- Plastics
- Liquid materials
- Dangerous waste

The machine manufacturer Rieter is to be told about the disposal of the machine.

E-mail: info@rieter.com

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13 Appendix

This chapter contains information about:

- Standard tightening torques
- Tools and gauges

13.1 Standard Tightening Torques

Screw Dimension	Strength Class	Tightening Torque [N•m]	Clamping Force [kN]
M4 Friction coefficient 4G = 0.14	4.8 (welding stud)	1.5	--
	8.8	3.1	3.9
	10.9	4.5	5.7
	12.9	5.3	6.7
M5	4.8 (welding stud)	3.0	--
	8.8	6.1	6.4
	10.9	8.9	9.3
	12.9	10.4	10.9
M6	4.8 (welding stud)	5.0	--
	8.8	10.4	9.0
	10.9	15.5	13.2
	12.9	18.0	15.4
M8	4.8 (welding stud)	13.0	--
	8.8	25.0	16.5
	10.9	37.0	24.2
	12.9	43.0	28.5
M10	4.8 (welding stud)	25.0	--
	8.8	51.0	26.0
	10.9	75.0	38.5
	12.9	87.0	45.0
M12	8.8	87.0	38.5
	10.9	130.0	56.0
	12.9	150.0	66.0
M14	8.8	100.0	52.6
	10.9	146.0	77.2
	12.9	171.0	90.4
M16	8.8	215.0	72.0
	10.9	310.0	106.0

Screw Dimension	Strength Class	Tightening Torque [N•m]	Clamping Force [kN]
	12.9	370.0	124.0
M20	8.8	430.0	117.0
	10.9	620.0	166.0
	12.9	720.0	194.0
M24	8.8	740.0	168.0
	10.9	1080.0	239.0
	12.9	1240.0	280.0

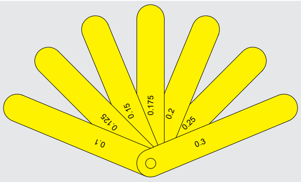
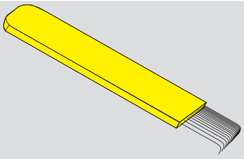
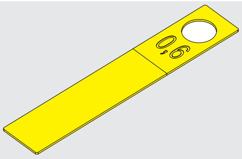
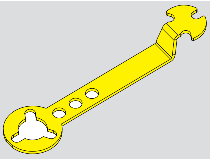
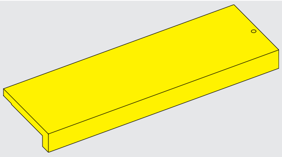
13.2 Tools and Gauges

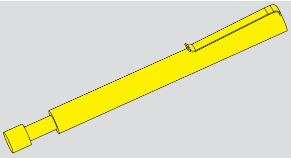
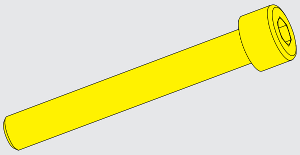
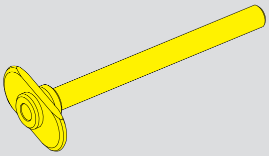
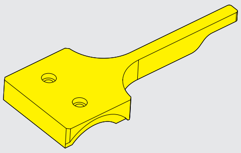
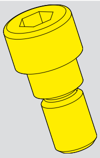
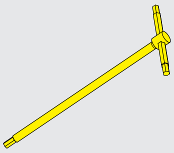
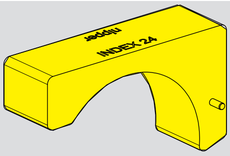
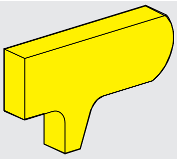
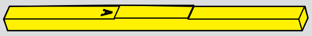
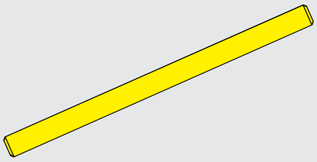
This chapter contains the Rieter-specific tools and gauges for:

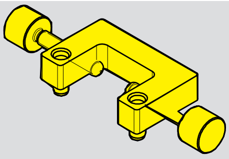
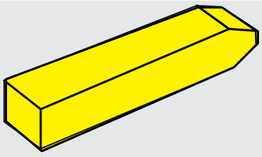
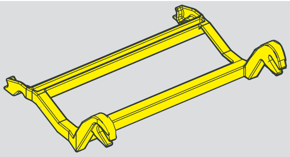
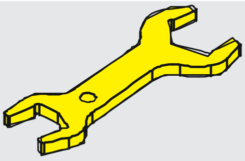
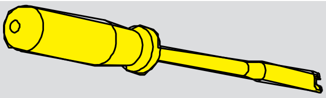
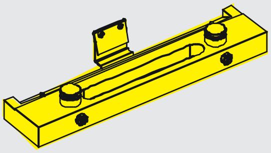
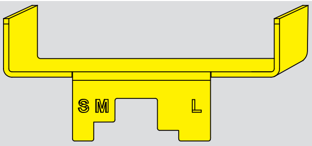
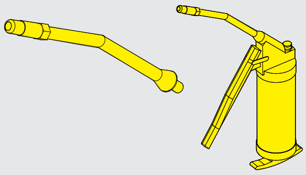
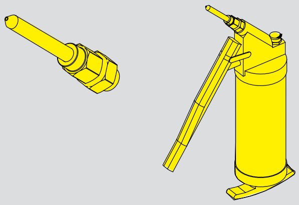
– The transport of the machine

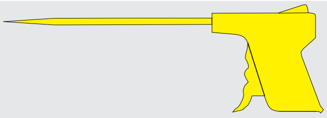
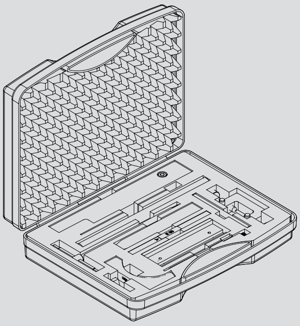
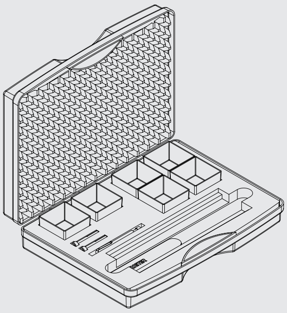
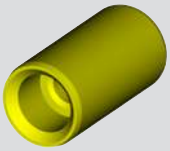
– The maintenance of the machine

– The repair of the machine

Tool	Tool Name	Function Description
	Feeler gauge	The feeler gauge is used to measure the distance between the circular comb and the nipper.
	Circular comb cleaner	The tool is used for cleaning the circular comb.
	Feeler gauge 0.6	The gauge is used for calibrating the delivery disks in the delivery unit.
	Counter holder	The tool is used for replacing the belt pulley.
	Nipper caliber	The nipper caliber is used for setting the feed trough plate in a nipper.

Tool	Tool Name	Function Description
	Magnetic sensing pin	The magnetic sensing pin is used to remove the spacer disk from a circular comb.
	M 8 screw	The M 8 screw is used to remove the bar from a circular comb.
	Distance gauge	The distance gauge is used to set and measure the nipper opening amount.
	Nipper shaft gauge	The gauge is used for the basic setting of the nipper shaft.
	Nipper shaft dowel screw	The tool is used for fixing the nipper shaft gauge onto the nipper shaft.
	Hexagon socket head wrench SW 6	The tool is used for loosening and tightening screws.
	Counterweight gauge	The gauge is used for checking the leveling of a nipper shaft coupling.
	Top comb gauge	The gauge is used for checking the distance between a top comb and a bottom nipper.
	Nipper gauge	The gauge is used for checking the default settings of a nipper.
	D6 × 100 pin	The D6 × 100 pin is used to set the eccentric shaft.

Tool	Tool Name	Function Description
	Adjusting device	The adjusting device is used for setting the detaching distance.
	Ri-Q-Comb brush gauge	The gauge is used for setting a circular comb brush.
	Nipper lever	The nipper lever is used to open and close the top of a nipper.
	Open-jaw spanner	The tool is used for tightening and loosening screws.
	Screwdriver with central recess	The tool is used for adjusting the pressing force of airjet pipe in the ROBOlap.
	Top-comb setting device	The top-comb setting device is used to set the penetration depth of the top comb.
	Distance gauge	This distance gauge is used to set the batt suction unit of the ROBOlap.
	Grease gun adapter for taper lubricating nipples	The grease gun adapter for taper lubricating nipples lets grease to be pushed into the taper lubricating nipples. 1 stoke = 0.5 cm^3
	Lubrication pin 10	The tool is necessary to lubricate the bearings of the top detaching rollers at the combing units.

Tool	Tool Name	Function Description
	Roller picker	The roller picker is used to pick up the materials that are collected around the rollers and other machine parts.
	Box of gauges	These gauges are used for examining different settings on the machine
	Tool box circular comb	These tools are used for examining circular comb settings
	Press on/off device	The press on/off device is to be used to remove the expired top roller cot from the top roller or to install the new top roller cot to the top roller.

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RIETER

Rieter Machine Works Ltd.
Klosterstrasse 20
CH-8406 Winterthur
T +41 52 208 7171
F +41 52 208 8320
machines@rieter.com
aftersales@rieter.com

www.rieter.com

Rieter India Private Ltd.
Gat No. 768/2, Village Wing
Shindewadi-Bhor Road
Taluka Khandala, District Satara
IN-Maharashtra 412 801
T +91 2169 304 141
F +91 2169 304 226

Rieter (China)
Textile Instruments Co., Ltd.
Shanghai Branch
Unit B-1, 6F, Building A,
Synnex International Park
1068 West Tianshan Road
CN-Shanghai 200335
T +86 21 6037 3333
F +86 21 6037 3399

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